The Global Mental Health Assessment Tool Primary Care and General Health Setting Version (GMHAT/PC): A validity and feasibility study – Spanish version

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ABBREVIATIONS

ASSIST	Alcohol, Smoking and Substance Involvement Screening Test
AUDIT	Alcohol Use Disorders Identification Test
BDI PC	Beck Depression Inventory for Primary Care
CES-D	Centre for Epidemiologic Studies-Depression scale
CHAT	Case-finding and Help Assessment Tool
CIDI	Composite International Diagnostic Interview
DALYs	Disability-adjusted life years
DMI-18	Depression in the Medically Ill-18
EPDS	Edinburgh Postnatal Depression Scale
GHQ	General Health Questionnaire
GMHAT/PC	Global Mental Health Assessment Tool/ Primary Care
GP	General Practitioner
GPCOG	General Practitioner Cognitive Assessment of Cognition
HADS	Hospital Anxiety and Depression Scale
HSCL-25	Hopkins Symptom Checklist-25
ICD	International Classification of Diseases
IHDS	International HIV Dementia Scale
mhGAP	Mental Health Gap Action Programme
MINI	Mini International Neuropsychiatric Interview
MIS	Memory Impairment Screen
MMSE	Mini-mental State Examination
OASIS	Overall Anxiety Severity and Impairment Scale
PC-PTSD	Primary Care Post-Traumatic Stress Disorder screen
PCCL	Early Detection Primary Care Checklist
PDSS	Postpartum Depression Screening Scale
PHC-cog	Public Health Centre Cognitive Dysfunction Test

PHQ	Patient Health Questionnaire
PRIME MD	Primary Care Evaluation of Mental Disorders
QALY	Quality-Adjusted Life Year
QoL	Quality of life
SAMISS	Substance abuse and mental illness symptoms screener
SCL	Symptom Check-List
SCOFF	Eating disorder screening questionnaire
SDDS-PC	Symptom Driven Diagnostic System for Primary Care
SPIFA	Structured Psychiatric Interview for General Practice
SRQ	Self-Report Questionnaire
WB-DAT	Web-Based Depression and Anxiety Test
WHO	World Health Organization

ABSTRACT

BACKGROUND:

There is an urgent need to provide training and tools to frontline health workers in order for them to properly diagnose and treat mental illnesses in Latin-American communities, since the vast majority of people with a mental illness suffer in silence. A computer-assisted interview, the Global Mental Health Assessment Tool (GMHAT/PC) has been developed to assist general practitioners and other health professionals to make a quick, convenient, yet reasonably comprehensive and standardised mental health assessment. GMHAT/PC has been translated into various languages including German, Dutch, Chinese, Hindi and Arabic. This is the first study, of a GMHAT/PC Spanish version carried out in Latin America, to establish its validity in that culture and feasibility to be used in the health care setting. If proven a valid tool through this study, the GMHAT/PC Spanish version will be an important aid towards improving the mental health of Spanish-speaking communities within the Latin-American region.

AIM:

The study aims at assessing both the validity of a GMHAT/PC Spanish version, and the feasibility of utilising a computer assisted diagnostic interview by GPs.

DESIGN:

1) Validation study was planned to establish whether the GMHAT/PC based diagnosis compares well with the consultants ICD-10 based diagnosis (Gold Standard)

2) Feasibility study was carried out to examine whether GMHAT/PC can be used in routine clinical care in a general health setting.

MATERIALS AND METHODS:

In the first study (validation), participants varied from those who were in remission i.e. without much psychopathology to those had symptoms of a severe mental illness. They were recruited from in-patient (82%) and out-patient (18%) mental health settings in Colombia. The participants were expected to have a wide range of psychiatric diagnoses (anxiety disorders, depression, psychosis, bipolar affective disorder, organic mental disorders, and other diagnoses).

All consecutive patients were interviewed by GPs using GMHAT/PC and psychiatrists made an independent diagnosis applying ICD-10 criteria.

The second study (feasibility) was carried out on patients hospitalised at medical, surgical and women's wards during a period of one month in each service. The diagnosis of a medical illness was made by specialists in each service. A trained GP carried out psychiatric assessment of all participants using GMHAT/PC.

RESULTS:

First study (validity): two hundred ninety-nine patients (n=299) participated, 54.18% males and 45.81% females in the age range of 14-78. All patients were interviewed independently by seven psychiatrists with over five years of clinical experience.

The mean duration of GMHAT/PC interview was 12.5 minutes. Most patients were pleased that they were asked about every aspect of their mental health.

Psychiatrists made a single diagnosis in 183 (61%) cases, multiple (two) diagnosis in 112 (37%) cases and multiple (three) diagnosis in another four cases. GMHAT/PC in almost all cases gave additional multiple diagnoses.

The results show an acceptable-to-good level of agreement between the GPs' (GMHAT/PC) diagnoses and the psychiatrists' (clinical) diagnoses of any mental illness, Kappa 0.58- 95% C.I (0.46, 0.72). There is a good level of sensitivity (81%) and specificity (92%), with GPs correctly identifying 242 out of the 250 participants diagnosed with a mental illness, and 27 out of 35 of those who do not present any whatsoever. The agreement (kappa value) between GMHAT/PC diagnosis and psychiatrists ICD-10 based diagnosis of specific disorders were as follows: Organic disorders-0.87; Psychosis- 0.56; Depression-0.53; Mania-0.6, Alcohol and drug misuse- 0.62, Learning disorder- 0.4; Personality Disorder- 0.39 and Anxiety disorders- 0.14. The sensitivity of different disorders ranged from 63% (Mania) to 100% (Anxiety) and specificity from 71% (Anxiety) to 100% (organic).

The second study (feasibility): out of 455 medically-ill patients, 4.8% had a mental illness identified by GMHAT/PC interview. Anxiety, depression and organic disorders were the most frequently identified mental disorders in internal medicine and surgery. Cancer had a significantly higher prevalence of comorbid mental illness.

CONCLUSION:

GMHAT/PC -Spanish version used by GPs in this study detected mental disorders accurately and it was feasible to use GMHAT/PC in Colombia and Latin-American health settings. The findings of this study will have a big impact upon mental health service provision in Spanish-speaking nations within the Latin-American region as the Spanish version for GMHAT/PC will assist primary care physicians and other health workers in detecting and managing mental health disorders in the communities. There is no other comparable easy-to-use comprehensive mental health diagnostic tool available in Spanish.

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Chapter 1

Introduction and Background

1.1 Geographical Background

Colombia is a country characterized not only by its natural diversity, but also by its natural resources, geography, multiculturalism and multi-racialism.

Colombia is located in the northwest corner of South America. The capital city of Colombia is Bogotá. The surface of Colombia is of 2,129,748 km ². It limits the east with Venezuela and Brazil, the south with Peru and Ecuador and the northwest with Panama; In terms of maritime boundaries, borders Panama, Costa Rica, Nicaragua, Honduras, Jamaica, Haiti, the Dominican Republic and Venezuela in the Caribbean Sea, and with Panama, Costa Rica and Ecuador in the Pacific Ocean (Figure 1).

Figure 1. Geographical map of Colombia

The ethnic diversity in Colombia is the result of the mixture of indigenous Amerindians, Spanish settlers and African slaves, which gives rise to a population of mestizos, whites, mulattoes and blacks, as well as mixed blacks, and Amerindians, or Zambians. The proportions of the different ethnic groups vary considerably according to the region. Colombia is ranked as the fourth largest economy in Latin America, after Brazil, Mexico and Argentina and in the international ranking, is among the 31 largest in the world. The Colombian economy is fundamentally based on the production of primary goods for export, and on the production of consumer goods for the domestic market. One of the most traditional economic activities is the cultivation of coffee, being one of the world's largest exporters of this product. Coffee has been a central part of Colombia's economy since the beginning of the 20th century and has gained international recognition thanks to the quality of the grain.

Colombia is one of the mega diverse countries in biodiversity, ranking first in bird species. As for plants, the country has between 40,000 and 45,000 plant species, equivalent to 10 or 20% of total global species; this is even more remarkable given that Colombia is considered a country of intermediate size. Colombia is the second most bio diverse country in the world, lagging only after Brazil which is approximately seven times bigger.

Bogotá is the capital of Colombia (Figure 2). Bogotá is the political, economic, administrative, industrial, artistic, cultural, sports and tourism epicenter of the country. It is located in the center of Colombia, in the natural region known as the Sabana of Bogota, which forms part of the Cundiboyacence highlands, a formation located in the Eastern Cordillera of the Andes.

Figure 2. Map of Bogotá

As capital, it houses the most senior bodies of the executive branch (Presidency of the Republic), legislative and judicial branch.

According to The Economist, on the economic level, Bogotá stands out for its economic strength associated with the size of its production, the facilities to create companies and do business, financial maturity, attracting global companies and the quality of its human capital.

The airport of the city carries the largest volume of cargo in Latin America, and is the second in quantity of people. It is the city of Colombia with the largest number of universities and research centers. It has a wide cultural offer represented in a great quantity of museums, theatres and libraries, which has granted to the city the recognition of "South American Athens."

The validity study was carried out in three different settings in Bogotá: Fray Bartolomé Clinic, National University and Santa Clara Hospital (Figures 3, 4 and 5).

Figure 3. Fray Bartolomé de las Casas Clinic

Figure 4. National University – Faculty of Medicine

Figure 5. Santa Clara Hospital

1.2 Background of the Study

In the year 2009 in Huila, southern Colombia, the author of this study, PhD Candidate Paola Tejada - hereafter referred myself as Tejada, was elected by the local Health Department with the purpose of elaborating a status report on Huila's mental healthcare system, and outline solutions to issues raised by that report.

Huila is a department (province) in south-western Colombia separated by the upper Magdalena valley, occupying Andean Cordilleras Mountains covering an area of about 14,000 square kilometres with a population of 1.13 million, with significant rural inhabitants.

In Huila, there is a network of health services consisting of the primary, secondary and tertiary levels of care. Primary care is provided on the first level of care, which features a rudimentary mental health care since there is a lack of a specialised healthcare programme in the community. Unfortunately, specialised services in the field of psychiatry are mainly concentrated in Huila's sole metropolitan city Neiva. This, therefore, significantly hinders the

accessibility to services by the rest of the region's population. The vast majority of patients are consequently treated in the Mental Health Unit at Neiva's University Hospital: Hernando Moncaleano Perdomo (Figure 6). As a result, this University Hospital provides healthcare to the region in its entirety (over one million inhabitants).

Figure 6. Neiva's University Hospital: Hernando Moncaleano Perdomo

Medical workers (doctors) are the only professionals who can prescribe medication. Patient referral to receive specialist treatment is done by general practitioners. The only protocol that is currently available is provided by the Ministry of Health. The distribution of mental health professionals between urban and rural areas is markedly uneven, as trained psychiatrists either work in Neiva or its nearest suburbs.

Huila's Health Department, as the main statutory body in the region, provides training to professional health workers on how to deliver mental health care. However, there is not a specified requirement of the participation and/or attendance to the training sessions by health care professionals. Additionally, lack of attendance records, and kind of health workers attended the sessions are serious drawbacks in evaluating the value of training programme

Lack of organised and effective mental health training program in the region, led Tejada to consider ways by which primary care health workforce get equipped with mental health knowledge and skills to assess, and manage people with mental disorders in the communities. A programme and strategy that is applicable and doable in the region with the intention to meeting the long awaited mental health needs of the population.

The systematic literature review carried out to outline such a strategy led Tejada through a document of the World Federation for Mental Health, *Mental Health in Primary Care: enhancing treatment and promoting mental health.* In that Global Mental Health Assessment Tool (GMHAT/PC) was presented as a vehicle for detection of mental disorders in primary health care. The developer of GMHAT/PC (Professor Vimal Sharma) was approached to explore possibilities of using GMHAT/PC in clinical service development in Colombian region.

Tejada as a result came to see Prof Sharma, and expressed her interest in working and facilitating a Spanish version for GMHAT/PC. With his full consent, she applied for a national grant in order to obtain financial resources to carry out this study. Sadly, to Tejada's disappointment, the grant was not approved. They recommended that it would be much more useful to make a guide in mental health with algorithms adapted for the general practitioners' use. They also mentioned that complexities of the country would require an adaptation of GMHAT/PC that serves to solve locally-generated issues, rather than using this as an international adaptation of tool.

Despite of unfavourable response, Tejada strongly felt that primary care health workers needed a practical clinical tool they could use in their day to day clinical assessments. Her perseverance and motivation to make this tool available to local health workers through this study remained fairly strong. It was at that point, Prof Sharma suggested Tejada to apply for a placement as a PhD student at the University of Chester, and present this study as part of her doctoral thesis.

The following sections of this chapter cover a review of mental health unmet need, challenges encountered in mental health delivery (this will include relevant data from international literature with special reference to data gathered from Colombia and Latin-America), the tools and instruments used in primary care to assess and diagnose mental disorders and justification of developing and adapting such tools in Colombia and Latin-America.. The following chapters will cover methodological aspects, results, and a discussion of the main findings of this study and its importance in Colombian context.

1.3 Prevalence of Mental Disorders and its Consequences

Mental disorders are prevalent in all regions of the world and are major contributors to morbidity and premature mortality. Worldwide, community-based epidemiological studies

have estimated that lifetime prevalence rates of mental disorders in adults are 12.2–48.6%, and 12-month prevalence rates are 8.4–29.1% (WHO, 2008). Table 1 shows the lifetime prevalence of the main mental disorders from studies all around the world.

Disorder	Lifetime prevalence	References
Any mental disorder	12–48.6%	(Kessler et al., 2007; WHO, 2008)
Depressive disorder/ dysthymia	4.2–20.8%	(Kessler et al., 2005; WHO, 2008)
Schizophrenia/ psychoses	0.3–1.6%	(WHO, 2008)
Dementia	0.84% - 3.5%.	(WHO, 2008)
Alcohol related disorders	10%	(WHO, 2008)
Anxiety disorders	4.8-31.0%	(Kessler et al., 2007; Kessler et al., 2005)
Impulse control disorders	0.3-25.0%	(Kessler et al., 2007; Kessler et al., 2005)
Substance use disorders	1.3-15.0%	(Kessler et al., 2007; Kessler et al., 2005)

Table 1. Lifetime prevalence of mental disorders from studies all around the world

The overall one-year prevalence of any mental disorder including addiction is 24% to 27% of the adult European population, aged between18 and 65.i.e. they are affected by at least one mental disorder in the preceding 12 months. Furthermore, 17% of the population suffer from addiction, affective, psychotic or anxiety disorder at any given time (Jager, Sobocki, & Rossler, 2008).

Epidemiological studies have also showed that 14% of the global burden of disease, measured in disability-adjusted life years (DALYs) can be attributed to mental disorders. It is estimated that 30% of the total burden of non-communicable diseases is due to these disorders and almost three quarters of the global burden of neuropsychiatric disorders is in countries with low and lower middle incomes (WHO, 2008). In Europe, brain disorders were estimated to account for 35% of the total burden of disease. Also, neuropsychiatric diseases have been estimated to account for 27% of DALYs and have much more impact on the global burden of disease than cardiovascular diseases or neoplasms (Jager et al., 2008).

The vast majority of mental health problems tend to affect young people. Mean age of onset is much earlier for anxiety (aged 11), and impulse-control (aged 11) disorders than for substance use (aged 20), and mood (aged 30) disorders. Half of all lifetime cases of mental disorders start before age 14 and three-quarters by age 24 (Kessler et al., 2005). Later onsets are mostly of comorbid conditions, with an estimated lifetime risk of any disorder at age 75 of 50.8%, only slightly higher than observed lifetime prevalence (46.4%) (Kessler et al., 2005).

In addition to age, other factors have bearing on prevalence of mental disorders. Poverty is associated with higher rate of mental illness. It is observed that even in the most developed countries, recession periods are associated with rising of mental health problems in the population (Frasquilho et al., 2016). An economic downturn tends to affect men more than women, and mostly increases the prevalence of depressive disorders, suicidal ideation and suicide attempts (Frasquilho et al., 2016).

Gender is also associated with differences in prevalence and manifestations of mental disorders. Overall, the risk of any mental disorder is significantly higher in women than in men (Jenkins et al., 2010). Several studies carried out in different countries have shown that the risk of depression and anxiety disorders is higher in women than in men (Jenkins et al, 2010; Munhoz, Nunes, Wehrmeister, Santos, & Matijasevich, 2016; Navarro-Mateu, Tormo, et al., 2013). A national study from Japan, found that, even though the prevalence for any mental disorder throughout life was greater in men, persistence of any mental disorder was higher in women and girls (Ishikawa, Kawakami, Kessler, & Collaborators, 2016).

Colombia has conducted four national surveys on mental health. They were carried out in 1993, 1997, 2003 and 2015, and became a national bench-mark for collecting key aspects of information on mental health including related demographic factors, specific psychiatric disorders and the service provisions available for mental health (Gomez, Escudero, Matallana, Gonzalez & Rodriguez, 2015, Posada, Aguilar-Gaxiola, Magana, & Gomez, 2004). The last survey National Mental Health Survey of 2015, gives the most up to date data on epidemiology of mental health problems in the country.

The lifetime prevalence of any mental disorder, based on 2015 survey, in adult population is reported to be 9.1%, for the last 12 months, 4.0%, and for the last 30 days 1.6% (Gomez et al., 2015). These figures for some reason show a lower prevalence of mental disorders in Colombia than reported in other countries (Kessler et al., 2007).

Mental disorders in adult age group are generally seen more in women than in men, except for bipolar affective disorders, where prevalence rates are higher in men (1.9% vs 0.6%) (Gomez et al., 2015).

Off all mental disorders in adults, the most common are affective disorders, with a lifetime prevalence of 6.7%, and the last 12 months of 2.4% (Gomez et al., 2015). The prevalence of any mental disorder is higher in urban areas than in rural areas with a ratio of around two to one both for life prevalence (10.0% versus 6.1%), and for the last 12 months prevalence (4.4% compared to 2.7%) (Gomez et al, 2015).

The prevalence of any mental disorder in the past 12 months of adults from vulnerable households (4.9%), and in state of poverty (4.4%) are higher compared to the national average (4%) (Gomez et al., 2015).

The prevalence of major depression in adults is 4.3%, (3.2% for men and 5.4% for women) (Gomez et al., 2015). These figures indicate that the prevalence of depression is at the lower end in Colombia as compared to ranges (4-20%) reported in other parts of the world (Kessler et al., 2005; WHO, 2008). Women in Colombia suffer from depression more than men is no different than that is reported elsewhere (Munhoz et al., 2016). The prevalence of anxiety disorders was 3.9% (4.9% in women and 2.9% in men). Anxiety disorders mostly manifested in the form of social phobia (2.7%). Generalised anxiety disorder was among1.3% of population (Gomez et al., 2015). The prevalence of anxiety disorders similar to the prevalence of depression in Colombia is also lower than that reported in other international studies (Kessler et al., 2007; Kessler et al . , 2005).

In Colombia, women in their adult life tend to have a higher frequency of comorbidity. Every one in five women found to have one or more comorbid disorders; whereas this ratio in men one to eight (Gomez et al., 2015). These finding suggests that overall a sizable proportion of adult population who suffer from mental disorders has complex needs and possibly prolonged suffering with a significant hopelessness.

As a matter of fact, 7.4% of adults have considered suicide (Women 7.6% and men 2.6%). High school educated people had higher suicidal thinking (Gomez et al., 2015).

Amongst illicit drug misuse, alcohol, cannabis, opiates, cocaine and inhalants were the most common substances used by the population. Cannabis was used by 6.3% of people between ages 18 and 44. The highest rate of cannabis consumption was by men. Cocaine was used by

1.3% and inhalants by 0.5% of people between 18 and 44. (Gomez et al., 2015). The use of psychoactive substances in Colombia was similar to as reported in other countries (1.3% to 15%) (Kessler et al, 2007; Kessler et al., 2005.).

Excessive drinking was found in 21.8% of adult population. . Over all 12% of men were considered at a risk of alcohol abuse (Gomez et al., 2015). There were regional differences in the drinking habits. For example in Bogotá, Colombia's capital district, the population had the highest binge drinking as compared to other districts (Gomez et al., 2015).

According to the data gathered for disease burden in the year 2010 in Colombia, neuropsychiatric problems such as major depression, bipolar disorders, schizophrenia and epilepsy were accountable to 21% of the global burden of healthy years lost in Colombia (Peñaloza, Salamanca, Rodriguez, Rodriguez, & Beltrán, 2014). For example, in men, hypertension was the leading cause of disease burden followed by major depression, aggression, bipolar disorders and schizophrenia (Peñaloza et al., 2014). Major depression was the leading cause of disease burden in women, followed by hypertensive disease, tooth decay, bipolar disorders and schizophrenia (Peñaloza et al., 2014).

1.3.1 Psychiatric morbidity and Physical Illness

Relationship of mental and physical illness is a complex one. Literature consistently report a high comorbidity of mental illness associated with physical illness, specially of anxiety and depression (Schwartzmann, Caporale, Suárez, & Sancristóbal, 2003). A high prevalence of depression is also found in patients suffering from cardiovascular diseases, hypertension, respiratory illnesses, a kind of cancer or stroke, diabetes and other metabolic disorders (Yan et al., 2013). Whereas, anxiety is more common as a comorbid condition with medical disorders such as: Angina, Mitral Valve prolapse, Idiopathic Cardiomyopathy, Labile Hypertension, Respiratory Illnesses, Migraine Headaches, Diabetes Mellitus, Gastrointestinal problems, Genitourinary difficulties, and a Thyroid disease (Härter, Conway, & Merikangas, 2003). Comorbid mental disorders may aggravate or mimic medical conditions, cause severe impairment of social functions, increase disease duration and mortality, reduce quality of life and increase overall health costs (Hernández et al., 2001; Härter et al., 2007; Yan et al., 2013).

The complexities of relationship between physical and mental conditions are outlined below:

1) Somatic symptoms (pain, disability) can potentially cause emotional distress, even pathological ones

2) The hospitalised patient is isolated from his routines and social network causing demoralisation and depression.

3) The nature of services at university hospitals adds additional stress caused by continuous rotations of students and doctors

4) Some physical illnesses may have a direct or indirect effect on brain functions as well as on emotional regulation.

The prevalence of a mental illness in hospitalised patients is around 40% (Franco, Gómez, Ocampo, Vargas, & Berríos, 2005; Kayhan, Cıcek, Uguz, Karababa, & Kucur, 2013). Most frequently reported disorders and symptoms in hospitalised patients are delirium, dementia, depression, anxiety and alcohol abuse. Cognitive deficit was found somewhere between 6.9% and 30% (Restrepo, Cardeño, Páramo, Ospina, & Calle, 2009; Schwartzmann et al., 2003) as many patients were in the elderly age group in these studies.

Depression is possibly the most common comorbid illness in medically ill patients ranging from 7.3% to 38% (Castro et al., 2012; Mogollón, Jinete, Moreno, & Álvarez, 2005). It particularly coexists with chronic diseases especially among hospitalised patients in medical wards, even higher in those who lack medical insurance, who suffer from severe psychical illnesses, and have repeated history of hospitalization (Mogollón et al., 2005; Yan et al., 2013; Zhong et al., 2010).

Anxiety disorders were found in 7.7% to 24.3% whilst, substance abuse in 14.4% of medical patients (Castro et al., 2012; Härter et al., 2007).

There are some differences in the nature of mental problems encountered in men and women. One study found prevalence of mental disorders in 60% of men (alcohol dependency in 26%, delirium or dementia in 10.8%, anxiety disorders in 10.4%, major depression in 7.8% and adaptation disorders in 3%). Whereas , a higher proportion (65%) of women had mental disorders, especially depression (major depression in 23.2%, anxiety disorders in 14.3%, adaptation disorders in 8.4%, dementia in 5.6%, delirium in 3% and alcohol dependency in 2.5%) (Hernández et al., 2001).

Despite a high prevalence of mental disorders in hospitalised patients, over half of them remain undetected and therefore fail to receive adequate treatment reflecting poor provision of services for mental disorders in general hospitals (Franco et al., 2005; Hernández et al., 2001; Zhong et al., 2010). A poor recognition of mental illness in medically ill patients also has adverse influence on their morbidity, mortality, quality of life and unnecessary administration of pharmacological and diagnostic procedures (Yan et al., 2013).

The vast majority of studies carried out on mental illnesses upon hospitalised patients have some limitations. They have different methodology (i.e. assessment methods, time window, sampling procedures) applied in the studies (Härter et al., 2003). A handful of studies have focused on specific somatic diseases, e.g. asthma, cancer, chronic spinal pain and atherosclerosis. Some studies have addressed specific mental illnesses such as depression (Campo, 2005). Most studies used self-reported scales to identify mental illnesses (Yan et al., 2013). None of these studies used a comprehensive assessment to detect a broad range of mental disorders in medically ill patients. Campo (2005), therefore, recommended using standardised and clinically-designed interviews and/or international diagnostic criteria in this group of patients so as to get more accurate diagnoses of their mental disorders.

1.3.2 Personal and Family Distress due to Mental Disorders

Mental disorders cause personal distress for several reasons: Frequent and severe symptoms are more distressing and painful; Consequences of mental illness on daily living, work and family life are often negative; Poor availability, acceptability and effectiveness of treatments and interventions add further to distress; And lastly, negative public attitude and prejudices toward mental illness further demoralise mental illness sufferer (Thornicroft et al., 2004). For example, schizophrenia is a relatively low prevalence yet severely disabling condition and therefore has a significant adverse impact not only on individuals but also, on their families and the wider society (Thornicroft et al., 2004). On the other hand, mood and anxiety disorders are considered to be less severe than schizophrenia. But, due to their high prevalence and recurrences, they can be equally distressing and cause adverse social consequences. Some studies have showed that people with severe mental disorders are often unemployed and single. They tend to have neither close friends nor daily contact with their families, and rarely utilise leisure activities (Thornicroft et al., 2004).

Mental illness of a family member equally affects the whole family and relatives who often take a role of care providers thus putting them in a 'caregiving situation'. This is identified as an important variable determined by characteristics of the patient's illness that impact on the quality of life of the caregiver (Wong, Lam, Chan, & Chan, 2012). These factors include the functional status of the patient as well as caregiver's perception and evaluation of the care needs of the patient. Even though, providing care may have its rewards for family-caregivers, they inevitably suffer from significant stresses being in a 'care-giving situation'. This adds to a significant burden on care givers both objective and subjective (Wong et al., 2012). Needless to say, that family care providers often receive inadequate assistance from mental health professionals (Saunders, 2003; Sharma, Chakrabarti, & Grover, 2016). Studies in both China and the United States reveal that problematic behaviours of the patient, and the disrupted daily life of the caregiver are sources burden for the family when caring for individuals with serious mental disorders (He, Zhou, Sun, Guo, & Rosenheck, 2015). In a review of gender differences in caregiving amongst families, the authors highlight that majority of care givers are women and they also suffer from burden and stresses of caregiving more than men feeling more anxious, tired, frustrated and isolated, (Sharma et al., 2016). Furthermore, distress is also higher when caregivers have more contact with patients, when the patients live with their families, and when patients are older (Thornicroft et al., 2004). Vulnerable care providers' 'neuroticism' personality factor acts as a powerful predictor of caregivers' well-being, psychological distress and global quality of life (Möller-Leimkühler & Wiesheu, 2012).

Over all caring for patients with mental disorders remains a family affair both in developed as well as in developing countries. (He et al, 2015; Sharma et al, 2016). Even countries who invest more in mental health services, stress equally on community and family support of patients with chronic mental illnesses. In developing countries however, families are always the cornerstone of care (Sharma et al., 2016).

According to Tejada's experience in Colombia, most caregivers of patients with a mental illness are relatives and women, based on the role of caregiving is traditionally assigned to women in the Colombian culture. In Colombia, it is generally expected that she (woman caregiver) should be available at all the time. She is also responsible for taking the ill individual to the required consultations. This expectation adds to the pressures of working women, as they in addition look after their children as well as house hold affairs.

The care givers most common concern remains about their financial insecurity due to mental illness's adverse impact on job (Thornicroft et al., 2004). It is strongly recommended that occupational skills are maintained and supported from early on as patient's employment remains an important protective factor on the caregiver's burnout (Möller-Leimkühler & Wiesheu, 2012).

Tejada believes that this piece of work will assist in giving front line health workers a tool to identify and treat mental disorders at early an early stage to reduce the stresses of patients and their families in Columbia and Spanish speaking countries.

1.3.3 Effect of Mental Disorders on QALYs

The epidemiological transition from acute to chronic illness results in a parallel negative change in the measurement of the health status of populations. The focus has therefore undoubtedly shifted from mortality rates to the introduction of functioning, disability and Quality of Life (QoL) (Fernández et al., 2010).

The Quality-Adjusted Life Year (QALY) is a measure that provides us with a person's or group's lived years of relatively perfect state of health out of the actual number of years of this person or group lived (Cañón & Rodríguez, 2011). For example, a year of life lived in perfect health is worth 1 QALY, and half a year lived in perfect health has an equivalent of 0.5 (Fernández et al., 2010). Quality of life (QoL), the concept that QALY therefore intends to measure, covers the actual or perceived level of fulfilment across physical, psychological and social aspects of a person's life (Chisholm, Healey, & Knapp, 1995).

Psychiatric disorders affect many aspects of a person's quality of life adversely. Dysthymia and major depressive disorders, for instance, lead to the largest loss of QALYs. In a study, as pointed out by Saarni et al (2007), depressive disorders were responsible for a total of 55% of a QALY loss, whereas anxiety disorders and alcohol dependence were responsible for 30%, and 15%, respectively.

On a large-scale cross-sectional epidemiological survey of a nationally representative sample conducted in Singapore, the authors reported that chronic pain was associated with the largest loss of QALYs. This was followed by hypertension and major depressive disorder (Subramaniam et al., 2013). A similar study carried out in Spain showed that mood disorders

ranked second behind pain-related chronic medical conditions in loss of QALYs (Fernández et al., 2010).

1.3.4 Cost to Economy

The expenses imposed by mental disorders in any country include the cost of: a) organizing and operating mental health-related services, b) the impact caused upon the resources of families and care-givers, c) the productivity losses due to debility, morbidity and premature death, d) the expenses tied to crimes caused by mental disorders, and e) the psychological pain borne by the patients and their family members (Kirigia & Sambo, 2003). The World Economic Forum estimated that the global economic burden caused by mental disorders exceeded the costs of each of the four major non-communicable diseases, i.e. diabetes, cardiovascular diseases, chronic respiratory diseases, and cancers (Xu, Wang, Wimo, & Qiu, 2016).

Despite all of these facts, almost a fourth of countries have no designated budget for mental health. Even those countries (21%) that have a designated mental health budget, spend less than 1% of their total health budget on mental health (WHO, 2008). Countries with low-sized and middle-sized household incomes bear the most burden caused by mental and substance use disorders and yet these countries have the least resources available to manage them (WHO, 2008).

Poverty is also associated with a high prevalence for common mental disorders. Factors such as low levels of education, unemployment, and lack of social support systems account for a high vulnerability to mental disorders. Mentally illness through loss of job and productivity further worsens their financial condition. Thus, setting up a vicious cycle of poverty and mental disorder (Patel & Kleinman, 2003).

Data gathering on the economic burden of diseases are essential for policy-makers for the purpose of setting up public health priorities, and prudently allocating scarce resources (Lobo et al., 2002) (Xu et al., 2016). The total cost of mental disorders in Europe in 2010, was €798 billion, meaning that the average cost per inhabitant amounted to €5.550 (Olesen, Gustavsson, Svensson, Wittchen, & Jonsson, 2012). In addition, the total annual cost per disorder in billions of euros was as follows: addiction 65.7, anxiety disorders 74.4, dementia 105.2, eating disorders 0.8, mental retardation 43.3, mood disorders 113.4, personality

disorders 27.3, psychotic disorders 93.9, sleep disorders 35.4, and somatoform disorder 21.2 (Olesen et al., 2012).

In China, the total annual costs of mental disorders has increased from $1,094.8 in 2005 to $3,665.4 in 2013 for individual patients, and from $21.0 billion to $88.8 billion for the entire country (Xu et al., 2016). The total cost of mental disorders in 2013 accounted for more than 15% of the total health expenditure in China, and 1.1 % of China's gross domestic product (Xu et al., 2016).

In Spain, the societal cost of Neuro-psychiatric disorders in 2010 was estimated at €84 billion of that for mental disorders was €46 billion (55% of the total) (Parés-Badell et al., 2014). Of that €15 billion accounted for dementia, and €65 million for eating disorders. The overall direct healthcare costs was 37%, non-medical cost 29%, and indirect cost amounted to 33%.

Affective (depressive) disorders were the most costly mental disorder followed by dementia and addiction. The cost of individual cases of dementia and addiction were far greater (Jager et al., 2008). The average annual cost of an adult with depression was close to €1800 (Salvador-Carulla et al., 2011).

Notwithstanding that schizophrenia affects only 1.0% of the world population in adulthood; the care for this disorder consumes approximately 1.6% to 2.6% of the total health costs of western developed countries. Moreover, the largest share of these costs is due to psychiatric hospital admissions (Leitão, Ferraz, Chaves, & Mari, 2006).

The cost items for mental disorders included direct medical costs, direct non-medical costs, and indirect costs. The direct (cost of care) and indirect (cost due to all other aspects affected by illness) costs constituted 81% and 19% of the total economic burden of mental disorders (Kirigia & Sambo, 2003).

1.3.4.1 Direct Costs of Treatment and Care

Direct costs encompass the goods and services, medical and non-medical, used in relation to a given disease (Carr, Neil, Halpin, Holmes, & Lewin, 2003). Direct medical costs refer to costs due to treatment and rehabilitation of mental disorders (e.g., outpatient cost, hospitalization cost, and drug cost). Direct non-medical costs include e.g. meal expenses during hospitalization (Xu et al., 2016).

The highest cost of mental illness is caused by in-patient hospital services. In-patients' costs account for 77% of overall mental health care costs (Carr et al., 2003). Day hospitals, day centres, psychiatrists, community psychiatric nurses, psychologists and social workers constitute other high cost items (Mangalore & Knapp, 2007). The use of rehabilitation services or day programmes by a minority of patients (19.1%) accounted for a relatively small proportion (4%) of mental health care costs, less than the expenditure on medication (5%) (Carr et al., 2003).

In European countries, mental disorders constitute 13% of the total direct health care cost and, out of total drug expenses, 17% are used for treatment of neuro-psychiatric disorders (Jager et al., 2008). The total cost on psychiatric hospitals is 10.8% of the costs of all hospitals (Jager et al., 2008).

The annual direct cost of depression is around 41 million Euros in primary care, 8.1 million Euros in mental health specialised care, 5.6 million Euros towards hospitalisation and 101.1 million Euros for drug treatments (Salvador-Carulla et al., 2011).

The direct estimated cost of schizophrenia was 80.0% for psychiatric hospital admissions (48.7% for new hospital admissions and 30.5% for long-stay patients), and only 11.0% was attributed to out-patient care (Leitão et al., 2006).

The direct cost of mental health care spent on inpatient services can possibly be reduced by early intervention in the communities. This study therefore is valuable in assisting primary care health professionals in diagnosing and treating mental illness in the communities, and avoiding mental illnesses getting severe requiring hospital admissions.

1.3.4.2 Indirect Cost

Indirect - or *productivity-*, costs represent economic products (goods and services) that are not produced owing to the morbidity and mortality associated with the disease. Indirect costs have traditionally been measured using the 'human capital' approach (Carr, et al. 2003).

A study in five European countries concluded that the indirect health care cost due to mental disorders amounts to 3 to 4 percent of the gross domestic product. From this, two thirds account for lost productivity and one-third due to sick leave (Jager et al., 2008). Another study showed that 92% of the total productivity losses of patients with mental disorders were

attributed to premature mortality and 8% to the time lost through hospitalization (Kirigia & Sambo, 2003).

Schizophrenia in particular, causes a high degree of disability. It was ranked 8th amongst those illnesses bearing the heaviest global burden due to disability resulted in 15-44 year old population (Leitão et al., 2006)

In Colombia there is no released data on the economic costs of mental illnesses. This poses a challenge for the government in planning health actions.

The economic burden of psychiatric disorders is likely to be reduced by scaling up mental health care services, and by providing early detection and intervention to prevent progression from mild mental disorders to severe and chronic disability (Xu et al., 2016). The author believes that the Spanish version of GMHAT/PC if used by GPs and other frontline health professionals will help in early and accurate detection of mental illness and assist greatly providing appropriate interventions.

1.3.4.3 Loss of Productivity by Sufferers and their Caregivers.

Mental health disorders affect not only patients, but their caregivers as well. It has been estimated that about 31% of the patients living in private households are looked after by an informal carer (spouse, relative or friend), and they spend an average of 5.6 hours a day in caring for the patient (Mangalore & Knapp, 2007). Many caregivers quit their jobs to care for their relatives. Mangalore and Knapp estimated the cost of lost productivity caused by unemployment and absence from work for both patients and carers. The cost of unemployment is nearly £1.5 billion, and another £9 million is lost due to absence from work (Mangalore & Knapp, 2007).

Among sufferers of schizophrenia, a study has shown that overall only 14.5% of men and 17.0% of women were employed and received wages from an employer, or income from their own business. And, only 29.5% of males and 25.4% of females had a regular full-time or part-time job over the previous year (Carr et al., 2003).

Other conditions such as severe depression or anxiety disorders have also been responsible for a significant reduction in earnings of both employed and unemployed patients in the previous 12 months. The mean estimated lost income associated with severe depression and

anxiety disorders was $4,798 per adult per year (Lund, Myer, Stein, Williams, & Flisher, 2013).

A study, comparing data from 27 EU countries, found that individuals with mental health problems were more vulnerable to losing their employment than those without (Frasquilho et al., 2016). This is probably gets worse in recession as discriminatory attitudes towards people with mental health conditions may harden, in the job market in particular as well as in society in general. This further leads to their suffering and isolation (Frasquilho et al., 2016).

Tejada observed during this study working between Colombia and UK, that in the UK most patients come to their appointments on their own whereas in Colombia invariably some family member accompanies the patient when attends for consultation, irrespective of the level of severity of the disease. Taking account of time for transportation to the place of care (sometimes hours), the duration of the consultation, and all the administrative procedures for claiming authorizations and getting medicines etc., the relatives spend a considerable time for these matters. This is further compounded by the lack of availability of mental health services in rural and remote part of Colombia.

1.4 Lack of services for people with mental illness

A large number of people with mental disorders do not receive appropriate care despite of all the progress made towards new psychological, social and pharmacological treatments for mental illnesses. This is indeed, a global phenomenon, affecting to a greater extent to low and low-middle income countries who constitute the largest proportion of the world's population. As high as 90% of people with mental disorders, in low and low-middle income countries, do not receive basic mental health care whatsoever (Armstrong et al., 2011). Recently, WHO highlighted this issue in their Mental Health Gap Action Programme (mhGAP). A large international survey supported by WHO showed that, 35- 50% of serious mental illness cases in developed countries had received no treatment in the previous twelve months. In less developed countries it was even worse reaching 76- 85% (WHO, 2008). Table 2 shows the difference in percentage between the number of people in need of treatment for their mental illnesses, and the number of people receiving treatment (treatment gap) in countries from different continents. High income and low income households are also represented below (Kohn, Saxena, Levav, & Saraceno, 2004).

Country	Mental disorder			
	Schizophrenia	Major depression	Panic disorder	Alcohol abuse or dependence
Brazil	58	49.4	47.8	53.3
Chile	33.4	39.2	22.7	83.8
Germany	60	54	65.3	ND
Israel	5.9	46.3	34.2	49.4
Mexico	73.5	78.5	70	93.8
United Kingdom	15	56	64	96
USA	35.7	46.1	41.2	78
Puerto Rico	9.7	70	ND	76

Table 2. Percentage difference between the number of people in need of treatment for their mental illnesses, and the number of people receiving treatment (Adapted from Kohn et al., 2004)

To bridge this gap, researchers have proposed a rational redistribution of mental health services, known as task-sharing from specialist mental health professionals, including psychiatrists, psychologists, and psychiatric nurses to non-specialist health workers in primary care and community settings (Mendenhall et al., 2014).

Although the Act No. 100 of 1993 - the Comprehensive Social Security of Colombia outlines the principles of equity, enforceability, comprehensive protection and quality to all residents but the reality is much different. There is a limited provision of overall health services, and minimal resources are allocated to Mental Health Programmes (Arango, Rojas, & Moreno, 2008). Act No. 100 tends to count health service provision in terms of hospital days, and excludes psychotherapeutic treatments greater than 30 days and individual psychotherapy, except provided during the acute and initial phase of the disease. As a result, health professionals end up providing crisis management type of services than more comprehensive services required for mental illness. This is even worse for people who are unable to afford private health care. Often, there is no continuity in treatment (Arango et al., 2008).

Scarce data is available in relation to access to mental health services in Colombia. The National Mental Health Survey from 2003 shows that between 85.5% and 94.7% of people

with a mental disorder do not have access to any health service whatsoever (Gomez, Escudero, Matallana, González, & Rodriguez, 2015).

The Ombudsman's Office is an institution of the Colombian State responsible for protecting and defending human rights. It is also responsible for addressing complaints related to denial of health care services to patients with mental illnesses. A study carried out by this office, found that the volume of *tutelas*[1] – judicial protection complaints – involving treatment and care of psychiatric illnesses have increased over time. For medicines, the number of *tutelas* went from 804 in 2003 to 897 in 2005, whereas those for treatments went from 99 to 428 in the same period.

Eventually, the recommendations of this study led to a reform of the Health System in 2013. The Act No. 1616 of 2013 guarantees the right to mental health for Colombians, and seeks to diminish the barriers to access mental health services. In this reform, the benefit plan was adjusted and new technologies in mental health were included. They were included in: medical treatments, total or partial hospitalization services. Also, out-patient, individual, group, family and couple psychotherapy, for psychiatry and psychology, which were previously restricted to the 30 days of treatment and only during the acute phase (Gomez et al., 2015). In spite of these changes, there are a number of constraints and barriers in accessing services that will be further described in the next section.

1.5 Reasons for Inadequate Services

Several possible reasons for poor provision of mental health care are described in different international studies:

1. The majority of governments do not see mental health as a priority in itself and, therefore provide very little investment in this area. Proportionally, lower income countries designate even smaller proportion of their health budget towards mental health. The percentage of health expenditures dedicated to mental health is 0.5% in low income countries, and 5.1% in high income countries (Hatou, 2014).
2. In many countries, health care and social systems have placed tight restraints (for the sole purpose of money-saving) on specialty referrals. Such restrictions based upon an assumption

[1] **Tutela** (judicial protection complaints) is a legal mechanism that Colombian citizens can address to when they feel a certain right has been usurped.

that routine psychiatric disorders will be treated at the primary care level (Leigh, Stewart, & Mallios, 2006).

3. Primary care professionals are faced with quite a complex task of managing mental health problems in the community. However, they have limited necessary skills and knowledge required for detection and treatment of people with a mental illness. Research studies, for example, have stressed the lack of time and insufficient training given to primary care general practitioners, which makes them unable to produce satisfactory mental health assessments of their patients (Sharma & Copeland, 2009).

4. Many countries count on a very limited number of psychiatrists to provide services. They are often wrongly distributed to meet the needs of the population (Leigh et al., 2006). A great number of them usually are located in the main cities and, in some cases, a high proportion of these professionals emigrate from low-income to high-income countries (Sharma & Copeland, 2009).

5. Individuals in rural/remote areas are found to have higher rates of mental health disorders than those living in urban settings (Tomaras et al., 2011). They find accessing specialised mental health care with a number of barriers. These include: geographic isolation, lack of adequate numbers of properly trained mental health care providers, stigma surrounding mental health issues, long waits for psychiatric consultation, and costs associated with travel and time off work (Hodgins, Judd, Davis, & Fahey, 2007; Tomaras et al., 2011).

In addition to the above limitations, a recent National Study of Mental Health identified the following barriers in receiving care for mentally ill (Gomez et al, 2015.):

1. **Attitudinal barriers**: Negative attitude towards mental illness is associated to the stigma attached to mental illness. This springs from considering mental illness as some kind of mental weakness leading to lack of acceptance of mental illness, poor understanding of undertaking treatment and care and negative regards to mental health services. All of this, results in patients not seeing their doctors.
2. **Structural barriers**: These relate to accessibility of services. Remote locations and the costs of transportation prevent people receiving required care. In Colombia, the average required time to reach a mental health service from rural part is, about 32.3 hours.
3. **Professional barriers:** Fewer specialists, limited working hours, and unskilled primary care personnel in mental health are other important barriers.

1.6 Impact of Inadequate Mental Health Care

The inability carry out mental health checks correctly in primary care may lead to serious consequences for patients. This often results in to, failure to diagnose common disorders such as depression and anxiety, failure to properly identify co-morbid conditions, under-diagnose and possible misdiagnose and therefore resulting in mistreatment of mental disorders and medicine overuse (Faghri, Boisvert, & Faghri, 2010).

Lack of treatment leading to most severe form of illness, reduces value of sufferers with in their families, in fact they are considered to a burden on them. Their rejection by their family members further demoralize them leading to further deterioration of their mental health (Rugema, Krantz, Mogren, Ntaganira, & Persson, 2015). In some cultures, as a consequence, these people are hidden by their families and kept in inhumane conditions (Rugema et al., 2015).

Many patients can get themselves into alcohol consumption or psychoactive substances misuse, initially as a way to relieve symptoms but later turning in to a more complex problem coupled with untreated mental illness (Rugema et al., 2015).

Additionally, meagre training and understanding of mental health by people who work in primary care could perpetuate discriminatory attitudes and misconceptions about mental illnesses (Tomaras et al., 2011). This may cause wider delays in receiving right help and treatment, (Rugema et al., 2015).

1.7 Need for Action

Early and accurate detection of mental health problems and their appropriate treatment and would certainly reduce the global burden mental disorders impose on health care and social systems. Everyone is entitled to this basic and essential need- "The Right to Health", which includes Availability, Accessibility, Acceptability and Quality of care (AAAQ) (Rugema, Krantz, Mogren, Ntaganira, & Persson, 2015):

- Availability implies that health facilities, essential medicine, supplies and trained health care professionals should be available in sufficient numbers

- Accessibility means that health services should be accessed with no discrimination whatsoever, particularly to the most vulnerable groups. Health care should be economically and geographically accessible and in line with people's needs
- Acceptability indicates that health services have to respect medical ethics, indigenous cultures, and gender sensitivity of health service users
- Quality of care relates to providing health services by qualified staff who ensures safe and relevant treatment

There is evidence that "effective low-cost treatments (drugs, psychological treatments, and community based rehabilitation) are feasible, affordable and cost-effective for many mental disorders, and could be successfully delivered in primary health care settings" (Armstrong et al., 2011). The World Health Organization (WHO) has highlighted the urgent need to integrate mental health in primary care in order to reduce the gap between people with mental health needs and the attention that they need. The advantages of integrating mental health into existing primary care programmes include the opportunity for the provision of holistic care, reduction of stigma, and leverage of existing resources to promote efficiency, and greater effectiveness of health interventions (Petersen, Fairall, et al., 2016).

There are two differing views about managing mental health. One that general physicians and health professionals can manage people with mental illness themselves. The other view is that any type of mental health must be dealt by specialised mental health centres. With regards to the former, nurses, psychologists and social workers can play a significant role in primary care teams. Unfortunately, very little attention has been paid towards their training in detection and management of mental health problems in primary health care (Goncalves et al., 2013). The second view emphasising provision of mental health care by specialised centres by taking away a patient from his/her natural surroundings, ignores individual and community resources that could have a significantly positive value in his/her management. It is recognised that individual, family, community and social resources play a significant part in promoting mental health and reducing risks (Jenkins et al., 2010). Interventions at the population and community levels promote mental health; prevent deterioration of mental disorders and improve recovery of their psychiatric problems (Petersen, Evans-Lacko, et al., 2016).

An effective mental health intervention by general (non-specialist) health workers has been proposed to increase the coverage of mental health care in both low and high-income settings (Armstrong et al., 2011). Researchers have proposed transforming the role of psychiatrists, psychologists, and psychiatric nurses from service delivery to public mental health leadership to overcome this shortage of specialist care delivery (Mendenhall et al., 2014). This new role involves designing and managing mental health treatment programmes, building clinical capacity in primary care settings, supervision and quality assurance of mental health services, and providing consultation and referral pathways (Mendenhall et al., 2014).

1.8 Training Needs in Mental Health

Based on reasons described in the previous sections, there is an urgent need for good training of primary care staff to develop their skills in detecting mental illness, and get to employ them in their day-to-day practice. Unquestionably, they need to acquire relevant knowledge so that they can recognise, support, and refer if needed, people experiencing mental health disorders in their communities.

It has been shown that primary care staff can be trained in a few days, using relatively small funds and resources by including the mental health training package with other health packages as a part of local training system (Jenkins et al., 2010; Sweetland et al., 2014).

Despite all of this, training programmes have showed limited and mixed evidence of effectiveness (Goncalves et al., 2013). For example, one study showed that a training intervention for primary care and mental health workers did not provide consistent benefit in the recognition on mental health problems (Makanjuola, Doku, Jenkins, & Gureje, 2012). But, they also found evidence of differing patterns of results in different professional groups: the nurses increased their ability to recognise mental disorders, but not the doctors (Makanjuola et al., 2012). Other study has provided evidence for only short-term effectiveness of these training programmes (Jenkins et al., 2010). One study in Australia revealed that after a training workshop, there was an increase in reported use of psycho-education for patients with depression, use of cognitive behavioural therapy for patients with anxiety, and ease in obtaining advice to assist with the management of psychosis (Hodgins et al., 2007). In other study of training in rural places, participants felt that the training opened up new possibilities for inter-professional and inter-sectoral partnerships in providing mental health care that had the potential to benefit clients and the community (Heath et al., 2015). An important benefit of participation in this study appeared to be the opportunity to learn

about other professionals' role and a better understanding of the mental health services available in the community (Heath et al., 2015).

It has been suggested that more integration of mental health in training and education programmes, supported by mental health specialists, leads to primary care health professionals into applying a bio-psychosocial approach in their routine practice. This also assists in encouraging behaviour change (Goncalves et al., 2013). Education generally does not change behaviours unless associated with continuing support (Makanjuola et al., 2012). The necessity to integrate mental health in primary care has prompted researchers to explore ways of improving training in mental health assessment.

Primary care workers often identify the need of mental health training as a priority. Thus, they yearn for more training in interviewing, diagnostic and therapeutic skills relevant to all psychiatric disorders (Leigh et al., 2006).

The primary care groups have differing needs. Training in mental health for primary care should take account of content (interview skills, diagnosis, treatment, prevention, counselling, etc.) and context (how the health system works, available resources, whether it is a rural or an urban area, what are the mental health needs of the community, etc.). Therefore, differing localities need to develop specific primary care psychiatry training programmes meeting their local needs (Leigh et al., 2006).

There are examples of successful mental health training programmes through seminars and workshops (Makanjuola et al., 2012). Use of media such as tele-psychiatry has been identified as a potentially economical method for providing practitioner training (Tomaras et al., 2011). The length of the training may vary from a four days course to a three-semester period (Armstrong et al., 2011; Jenkins et al., 2010). Primary care doctors and nurses, social workers, psychologists and occupational therapists are the people which were targeted for training (Makanjuola et al., 2012). Another option is to train teachers by using a structured package of mental health training material which they adapt and use for the training of primary care providers (Makanjuola et al., 2012). The sessions are based on multi-method teaching consisting of theory, discussion, role plays, and videos (Loerch, Szegedi, Kohnen, & Benkert, 2000; Makanjuola et al., 2012). Topics include case detection, development of appropriate communications skills, principles and methods of mental health promotion, the main aspects of major psychiatric disorders, appropriate response and referral, supporting people with mental disorders and their families and links between mental health, and child

and reproductive health (Armstrong et al., 2011; Jenkins et al., 2010; Loerch et al., 2000; Makanjuola et al., 2012). To achieve a significant change in primary care workers' practice and patient outcomes, it is recommended they are given opportunities to rehearse their newly acquired skills through training. They also need more flexible approaches to alter their attitudes, skills, clinical competence and performance as well as working with specialist providers (Hodgins et al., 2007).

Some studies have shown that two factors that were most important in facilitating transfer of learning to practice were the credibility of trainers and training alongside colleagues with whom they might collaborate (Heath et al., 2015). Using non-specialist health workers to deliver mental health care requires basic conditions: increased numbers of human resources and improved access to medications; support, and compensation for health workers who take on new mental health tasks; and ongoing structured supportive supervision at community and primary health care levels (Mendenhall et al., 2014).

There is some disagreement around who should provide mental health training to non-specialist health workers across cultural contexts. In some countries specialists were preferred for their expertise whilst in other contexts they were not perceived as suitable trainers due to their limited community experience. Rather, recognizable people who are trusted amongst health personnel, by demonstrating their clinical and/or community work on mental health issues, were identified as those who should provide training (Mendenhall et al., 2014). It is worth stressing that quality of assessment depends on not only what to ask but how to ask about people's problems. Poole and Higgo outlined the art of psychiatric interviewing for psychiatrists, but the principles of assessing mental health equally applies to all health professionals (Poole & Higgo, 2006).

The need to improve psychiatric assessment in primary care has motivated some researchers to develop brief screening tools for common psychiatric conditions seen in general practice as part of a training strategy (Goncalves et al., 2013). The description, characteristics, uses and limitations of these tools will be discussed in the next chapter.

Chapter 2

Mental Health Assessment Tools in Primary Care

2.1 Critical Review of Mental Health Assessment Tools in Primary Care

Health services in primary care still lack skills to detect and treat people with mental health problems (Sharma & Copeland, 2009). Most of the time, GPs are the first line of contacts with those who suffer from a mental illness (Loerch et al., 2000). For this reason, it is important to establish systems to help primary care doctors to identify people with mental health problems at the earliest opportunity and to provide the most appropriate intervention.

Although only 5.4% of patients consult mainly for a psychiatric reason in health care settings, existing data shows that 1 in 4 people who come into contact with a health service has a mental disorder meeting the ICD10 criteria (Ansseau et al., 2004; Loerch et al., 2000). General practitioners therefore fail to detect or treat between 50% and 75% of the cases they routinely see in their practice (Ansseau et al., 2004; Loerch et al., 2000).

The most prevalent mental disorders in primary care are Affective disorders (31%), Anxiety disorders (19%) and Somatoform disorders (18%) (Ansseau et al., 2004). Depressive disorder is the second most common chronic condition seen in primary care (Farvolden, McBride, Bagby, & Ravitz, 2003; Orive et al., 2010). Approximately 12% of patients treated in general settings suffer from depression (Orive et al., 2010). But, only less than half of these patients are recognised by general practitioners.

It is argued that patients with either depression or anxiety can, indeed, present somatic symptoms (McGrady, Lynch, Nagel, & Tamburrino, 2010; Muntingh et al., 2011; Orive et al., 2010; Staab & Evans, 2001). Two third of patients with depressive disorders report somatic symptoms as a main presenting problem in primary care (Romera, Delgado-Cohen, Perez, Caballero, & Gilaberte, 2008). This often leads to unnecessary and extensive screening laboratory tests for spotting physical illnesses, along with inappropriate drug treatments, and referrals from one service to the other. This process results in turning their anxiety and depression into complex chronic conditions (Maizels, Smitherman, & Penzien, 2006).

Poor detection of mental disorders in primary care is highlighted by number of studies particularly of mood disorders (Gaynes et al., 2010). Equally, alcohol related problems are also not easily recognised by the primary care teams, even though alcohol abuse and dependence is found in 10% of their population (Ansseau et al., 2004; Gache et al., 2005). This lack of detection of alcohol abuse could be due to several reasons; ranging from lack of training, lack of use of screening scales to generally hesitation in asking questions about alcohol consumption (Gache et al., 2005). Diagnostic ability of general practitioners to identify alcohol related disorders was 41.7%, but only 27.3% of cases were actually recorded in their medical history (Mitchell, Meader, Bird, & Rizzo, 2012). What is more, substance abuse is present in 1 out of 5 patients within general medical contexts and yet only 20% of them were given screening questions for detection (Muntingh et al., 2011).

Lack of recognition of mental disorders by primary care physicians is due to many reasons. Lack of knowledge of mental illness, poor skills in how to ask questions about mental symptoms are the main one compounded by time constraints faced by GPs in busy clinics (Avasthi et al., 2008; Schmitz, Kruse, Heckrath, Alberti, & Tress, 1999).

It is therefore essential that primary care practitioners have some training in mental health as well as short and reliable tools that enable them to identify and manage patients with mental illnesses. There are different ways GPs can examine mental problems of their patients. They can use rating scales, structured interviews, and cognitive tests.

- **Scales:** measuring tools that consist of items that measure phenomena (such as anxiety or depression) which are not directly observable (many of them are self-rated) (Sanchez & Echeverry, 2004).
- **Structured interview:** series of questions or topics which evaluate different aspects of mental conditions. In this, clinicians are expected to stick to the questions given in the tool. Increasingly, semi-structured interviews (such as GMHAT/PC) that allows flexibility to adapt to questions according to patient's background are more acceptable in routine clinical practice.
- **Cognitive tests:** they consist of items that assess functions such as memory, language and orientation. These are limited to only specific aspect of mental problems.

One has to be clear about the purpose of using an instrument in particular clinical settings. Therefore, knowing the background of any tool i.e. Why was developed? What does that assesses? What settings that was used? And what are its psychometric properties (reliability and validity). Equally one has to look at the average time spent as well on how easy to use it i.e. its applicability, relevance, and usefulness (Orive et al., 2010; Sanchez & Echeverry, 2004).

In a clinical setting, we expect that a tool assisted diagnosis has to be accurate and should follow some international standards such as WHO criteria. If achieved, this can follow by an appropriate evidence-based clinical intervention, and the information gathered helps in some epidemiological monitoring as well (Karekla, Pilipenko, & Feldman, 2012). Inability to get right diagnosis can lead to inappropriate treatment (Farvolden et al., 2003). This chapter, therefore, aims at reviewing the instruments, scales and tools used for psychiatric assessment in primary care and identify their strengths and limitations.

2.1.1 Methodology Employed for the Review

The review was conducted by means of PUBMED and SCIELO literature searchers, and filtering through the categories of instruments, scales and tools used for adult psychiatric evaluation in primary health care. The search was performed using the MeSH terms: "Primary Health Care", "Mental Disorders / diagnosis" "Mass Screening" and "Questionnaires". The search delivered studies published in both English and Spanish, involving adults, with no date restriction. All the references were cited by the articles and identified additional references that were not initially detected. Furthermore, the articles were reviewed and a narrow selection was made with those which specified the instruments utilised in primary care, and provided their description and psychometric properties.

2.1.2 Literature Review Results

Exactly 40 instruments were found in references altogether. Out of this amount, 33 are scales, three are structured interviews, and four are cognitive tests.

2.1.2.1 Instruments for Screening and Diagnosis Orientation

Interview	References		Sensitivity %	Specificity %
Mini International Neuropsychiatric Interview MINI	(de Azevedo Marques & Zuardi, 2008)	Structured interview	75-92	90-99
Composite International Diagnostic Interview CIDI	(Kessler et al., 2013; Quintana, Andreoli, Jorge, Gastal, & Miranda, 2004)	Structured interview	68-80	90-98
Structured Psychiatric Interview for General Practice SPIFA	(Dahl et al., 2009)	Structured interview	NA	NA

Table 3. Interviews for psychiatric assessment (screening and diagnosis orientation) in Primary Care

In psychiatry, structured interviews are the key standard for diagnostic studies and are widely used in research (Farvolden et al., 2003). A couple of examples are the Structured Clinical Interview for Axis I Disorders DSM-IV (SCID-I) and MINI (de Azevedo Marques & Zuardi, 2008; Oslin et al., 2006; Quintana et al., 2004). Moreover, the Composite International Diagnostic Interview (CIDI) is a standardised structured interview developed by WHO to give psychiatric diagnoses according to ICD-10 and DSM IV (Goldberg, Prisciandaro, & Williams, 2012; Kessler et al., 2013; Quintana et al., 2004). Consequently, these interviews require longer time for administration. They also require training both for implementation and for its rating. The lengthy tools coupled with specific training needs explains why they have not been adapted widely in clinical practice in Primary Care (Staab & Evans, 2001). In 2004, Quintana et al., stated that psychiatric hospitals and primary health centres in Brazil, assessing the reliability of the CIDI, showed that the interview had an average duration of 2 hours and 30 minutes.

On the other hand, SPIFA is another interview that had shown a good inter-rater reliability for depression, anxiety disorders and suicide risk however, for patients who had comorbid mental problems the reliability was poor (Dahl et al., 2009). The average length of the interview was 22 minutes (Dahl et al., 2009).

2.1.2.2 Assessment Instruments for Organic Mental Disorders

Cognitive test	References		Sensitivity %	Specificity %
General Practitioner Cognitive Assessment of Cognition GPCOG	(Milne, Culverwell, Guss, Tuppen, & Whelton, 2008; Pirani et al., 2010)	Patient test/ informant interview	82	92
Memory Impairment Screen MIS	(Ladera, 2012; Milne et al., 2008)	Cognitive test	80-87	96
Mini-Cognitive Assessment Instrument Mini-Cog	(Ladera, 2012)	Cognitive test	71-79	89
Public Health Centre Cognitive Dysfunction Test PHC-cog	(Park, Lee, Lee, & Song, 2005)	Patient test/ informant interview	96	82
International HIV Dementia Scale IHDS	(Breuer et al., 2012)	Self-report	53-86	32-80

Table 4. Cognitive tests for psychiatric assessment in Primary Care

The assessment instruments for organic mental disorders are the GPCOG (Milne et al., 2008; Pirani et al., 2010), MIS (Ladera, 2012; Milne et al., 2008) , the Mini-Cog (Ladera, 2012; Milne et al., 2008), and the PHC-cog (Park et al., 2005). Their usage by primary care physicians is limited for some suspected cases with cognitive impairment.

The General Practitioner Assessment of Cognition (GPCOG) consists of cognitive test items and historical questions formulated about an informant. The validity of the measure was assessed by comparison with the criterion standard of diagnoses of dementia derived from the DSM IV (Brodaty et al., 2002). This makes GPCOG as a well-accepted instrument for dementia screening in primary care.

The Memory Impairment Screen (MIS) is a 4-minute, four-item cued-recall test of memory impairment. The MIS uses controlled learning to ensure attention, induce specific semantic processing, and optimise encoding specificity to improve detection of dementia (Buschke et al., 1999). Thus MIS provides quick and reliable screening for Alzheimer and other dementias.

The Mini-Cognitive Assessment Instrument (Mini-Cog) was found to be brief, easy to administer, clinically acceptable, effective, and minimally affected by education, gender, and ethnicity (Milne et al., 2008). It also has psychometric properties similar to those present in Mini-mental State Examination (MMSE).

In spite of the fact that MMSE is widely used in the U.K., GPCOG, MIS, and Mini-Cog have been identified that as clinically and psychometrically robust, and more appropriate for routine use in primary care (Milne et al., 2008).

The PHC-cog test is a simple, accurate, and objective performance-based tool in the screening for cognitive dysfunction (Park et al., 2005). The PHC-cog test is quick, and easy-to-use, and is highly recommended for the cognitive screening of the aging population in the primary care.

2.1.2.3 Assessment Instruments for Disorders Caused by Alcohol Consumption and Drugs

Scale	References		Sensitivity %	Specificity %
Alcohol Use Disorders Identification Test AUDIT	(Chishinga et al., 2011; Gache et al., 2005)	Self-report	55-94	79-98
Alcohol, Smoking and Substance Involvement Screening Test ASSIST	(Humeniuk et al., 2012)	Self-report	54-97	50-96
Substance abuse and mental illness symptoms screener SAMISS	(Breuer et al., 2012)	Self-report	86-95	49- 75
Single-item screening test for unhealthy alcohol use	(Smith, Schmidt, Allensworth-Davies, & Saitz, 2009)	single-item screening test	81.8	79.3

Table 5. Assessment Instruments for Disorders Caused by Alcohol Consumption and Drugs

Screening tools such as CAGE, AUDIT and the Michigan Alcoholism Screening Test focus exclusively on alcohol dependence (Chishinga et al., 2011; Gache et al., 2005). Additional tools are therefore needed for other associated problems (Chishinga et al., 2011; Gache et al.,

2005). Other instruments to assess substance misuse are; the ASSIST (Humeniuk et al., 2012), the SAMISS (Breuer et al., 2012) and the single-item screening test for unhealthy alcohol-use (Smith et al., 2009).

Most of alcohol and substance misuse screening tools were developed to identify these specific problems in primary care or in the communities. Using them on their own are not much of use in detecting mental health problems in primary care.

2.1.2.4 Assessment Instruments for Affective Disorders

Scale	References		Sensitivity %	Specificity %
Depression in the Medically Ill-18 DMI-18	(Orive et al., 2010)	Self-report	89-97	59-83
Beck Depression Inventory for Primary Care BDI PC	(Cameron et al., 2011; Orive et al., 2010)	Self-report	74-83	72-80
Hospital Anxiety and Depression Scale HADS-D	(Cameron et al., 2011; Orive et al., 2010)	Self-report	74-86	75-76
Patient Health Questionnaire PHQ-9	(Baader M et al., 2012; Cameron et al., 2011; Delgadillo et al., 2011; Orive et al., 2010; Wittkampf et al., 2009)	Self-report	68-93	75-96
Web-Based Depression and Anxiety Test WB-DAT	(Farvolden et al., 2003)	Self-report (computer assisted)	63-95	87-97
My Mood Monitor M-3 checklist	(Gaynes et al., 2010)	Self-report	82-88	70-80
Centre for Epidemiologic Studies-Depression scale CES-D	(Chishinga et al., 2011; Reuland et al., 2009)	Self-report	73-92	70-74
GDS 15	(Mitchell, Bird, Rizzo, &	Self-report	76-82	64-98

	Meader, 2010)			
GDS 30	(Mitchell et al., 2010)	Self-report	77	65
Edinburgh Postnatal Depression Scale EPDS	(Reuland et al., 2009)	Self-report	72-89	86-95
Postpartum Depression Screening Scale PDSS	(Reuland et al., 2009)	Self-report	78	85
Kessler 10 K-10	(Vargas,Villamil, Rodríguez,Pérez, & Cortés, 2011)	Self-report	72-78	73-79
Hopkins Symptom Checklist-25 HSCL-25	(Ventevogel et al., 2007)	Self-report	89	60-73

Table 6. Assessment instruments for affective disorders

Depression is the most common psychiatric diagnosis in primary care. Consequently, a vast majority of the scales have been developed for the diagnosis of depression (Kirkcaldy & Tynes, 2006). Several tools are available to detect depression in medically ill people going through primary care. For example, the depression subscale of the Hospital Anxiety and Depression Scale (HADS-D), the Beck Depression Inventory for Primary Care (BDI-PC), the Patient Health Questionnaire-9 (PHQ-9), the scale Depression in the Medically Ill-18 (MD-18), and the short version of DMI-18 (MD-10) (Cameron et al., 2011; Orive et al., 2010; Rickels, Khalid-Khan, Gallop, & Rickels, 2009).

Validation and utility of the PHQ-9 in the diagnosis of depression in primary care patients has also been carried out in Latin American countries. Colombia was included amongst them, and it came up with satisfactory results (Baader M et al., 2012; Castro et al., 2012). All the sets of instruments outlined above, are generally recommended for the screening and identification of depression in primary care (Orive et al., 2010). Additionally, the Zung Depression Scale and the Centre for Epidemiologic Studies (CES-D) have also proved to be useful in primary care (Chishinga et al., 2011; Reuland et al., 2009). Some scales are designed for geriatric depression diagnosis e.g. GDS15 (Mitchell et al., 2010). The Spanish versions of these scales based on their validity studies results led to doubtful recommendations of the CES-D and the PRIME MD 9- a version of the PRIME MD. The specificity was rather less than satisfactory (Reuland et al., 2009).

The above scales detect depression and none of them detect mania. This may lead to missing out patients with a bi-polar disorder. In these cases, a prescription of an antidepressant can increase the risk of causing a manic, hypomanic or mixed episode (Romera et al., 2008).

Lastly, the M-3 Checklist has proven to be useful as a valid, efficient and reliable tool for screening common psychiatric disorders in primary care: depression, bipolar, anxiety and post-traumatic stress disorders (Gaynes et al., 2010). This, however, leaves out other diagnoses such as psychosis, substance abuse and organic disorders.

2.1.2.5 Assessment Instruments for Anxiety and Stress-related Disorders

Scale	References		Sensitivity %	Specificity %
Social Anxiety Screening Questionnaire	(Sorsdahl, Vythilingum, & Stein, 2012)	Self-report	84	67
4-item Primary Care Post-Traumatic Stress Disorder screen PC-PTSD	(Davis, Whitworth, & Rickett, 2009)	Self-report	78	87
Overall Anxiety Severity and Impairment Scale OASIS	(Campbell-Sills et al., 2009)	Self-report	89	71
Four-Item Questionnaire	(Rickels et al., 2009)	Self-report	78	95

Table 7. Assessment instruments for anxiety and stress related disorders

As this table shows that there are few scales available to detect anxiety in primary care. Some of these are; the Social Anxiety Screening Questionnaire (Sorsdahl et al., 2012), the Overall Anxiety Severity, Impairment Scale OASIS (Campbell-Sills et al., 2009), and the K-10 (this has been validated and used in many Spanish speaking countries) (Vargas et al., 2011).

The four-item screening tool based on PRIME-MD anxiety and depression questions can alert family physicians to potential anxiety or depressive problems in the patient, and prompt for more detailed evaluation and possible treatment (Rickels et al., 2009).

2.1.2.6 Assessment Instruments for Psychotic Disorders, Eating Disorders and Somatic Ones

Scale	References		Sensitivity %	Specificity %
Whiteley-7 scale	(Fink et al., 1999)	Self-report	71-100	62-65
Early Detection Primary Care Checklist PCCL	(French, Owens, Parker, & Dunn, 2012)	Checklist completed by primary care practitioners	89	60
Eating disorder screening questionnaire SCOFF	(Hill, Reid, Morgan, & Lacey, 2010)	Self-report	84.6	89.6

Table 8. Assessment instruments for psychotic disorders, eating disorders and somatic ones

The Whiteley scale shows good psychometric properties in primary care but, its use is limited to the diagnoses of somatization and hypochondriasis (Fink et al., 1999).

Scales such as the Primary Care Checklist (PCCL) have been developed as tools for quick and easy use in primary care. They intend to identify early stages of psychosis (French et al., 2012).

The SCOFF scale, which has been adapted for use in different languages, appears a useful screening instrument, and has been widely accepted as a way to raise the index of suspicion of an eating disorder (Hill et al., 2010).

2.1.2.7 Other Instruments for Mental Disorders

Scale	References		Sensitivity %	Specificity %
Primary Care Evaluation of Mental Disorders PRIME-MD	(Ansseau et al., 2004; Avasthi et al., 2008; Bakker, Terluin, van Marwijk, van Mechelen, & Stalman, 2009; Loerch et al., 2000; Reuland et al., 2009)	Self-report/ structured interview	72-81	66- 100
General Health	(Schmitz et al., 1999)	Self-report	32-68	65-93

Questionnaire GHQ				
Symptom Check-List SCL-90-R	(Schmitz et al., 1999)	Self-report	39-75	59-95
Patient Health Questionnaire PHQ	(Castro et al., 2012; Karekla et al., 2012)	Self-report	75-87	88-90
Self-Report Questionnaire SRQ	(de Galvis, Mejia, Sierra, Bareno, & Berbesi, 2012)	Self-report	63-90	44-95
Symptom Driven Diagnostic System for Primary Care SDDS-PC	(Broadhead et al., 1995)	Self-report screening questionnaire/ diagnostic interview / longitudinal tracking form (computer assisted)	43-90	54-98
Provisional Diagnostic Instrument-4	(Houston et al., 2011)	Self-report	80-83	73-82
Case-finding and Help Assessment Tool CHAT	(Goodyear-Smith et al., 2008)	Self-report	26-96	40-97

Table 9. Other scales for psychiatric assessment in Primary Care

The Primary Care Evaluation of Mental Disorders (PRIME-MD) was designed as a diagnostic tool for the detection of the most frequent mental disorders in primary care and the population in general e.g. mood disorders, anxiety, somatoform, alcohol use, and eating disorders (Loerch et al., 2000). This tool is based on the DSM IV diagnostic criteria (Avasthi et al., 2008). It has been showed to be sensitive (0.67 ± 0.80) for the diagnostic categories of mood disorders, anxiety disorders, eating disorders and alcohol but not so, for somatoform disorders (Loerch et al., 2000). This has a sensitivity of 83%, a specificity of 88%, and a positive predictive value of 80% for diagnosis of any mental illness (Loerch et al., 2000;

Reuland et al., 2009). Moreover, an added value of PRIME-MD is that it assists in arriving on clinical diagnosis (Bakker et al., 2009; Spitzer, Kroenke, & Williams, 1999). The main drawbacks, however, are that it is not comprehensive enough to include most mental illness and it fails to identify patients that are in remission (Bakker et al., 2009).

The Patient Health Questionnaire (PHQ) is a self-reporting tool derived from the PRIME-MD to be used in primary care, as the PRIME-MD is found to be time-consuming and not easy to use when implemented in the general medical consultation. For example, the time taken by each patient answering the self-administered questionnaire requires and adds up on average 8.4 minutes on top of the physician's time taken in making further clinical assessment (Avasthi et al., 2008; Spitzer et al., 1999). This resulted in constructing a shorter version (Avasthi et al., 2008; Kroenke, Spitzer, & Williams, 2001; Spitzer et al., 1999). The PHQ and its subscales have shown good psychometric properties (Castro et al., 2012; Karekla et al., 2012; Kroenke et al., 2001). The Spanish version of PHQ-9 has been found to be useful in detecting mental health problems in hospitals (Baader M et al., 2012). Whereas, PHQ-9 remains a good screening tool, it fails to provide sound clinical diagnosis as well as severity (Amoran, Ogunsemi, & Lasebikan, 2012; Wittkampf et al., 2009).

GHQ and the SCL-90 are examples of screening tools for some mental disorders (Schmitz et al., 1999). The GHQ is a self-report questionnaire that aims to screen non-psychotic psychiatric disorders. It consists of a series of questions asking about recently experienced symptoms or behaviours (Schmitz et al., 1999). The SCL-90 is on the other hand a symptom inventory designed to cover a wide range of psychological problems. The responses obtained on SCL-90 are classified into nine symptom dimensions: somatization, obsessive-compulsive, interpersonal sensitivity, hostility, depression, anxiety, paranoid ideation, phobic anxiety, and psychoticism (Schmitz et al., 1999). These dimensions do not reflect specific diagnoses as per operationalised diagnostic systems such as the DSM or ICD 10; they only report the presence or absence of symptoms (Loerch et al., 2000; Schmitz et al., 1999).

The National Mental Health Centre in Colombia recommends the application of the SRQ for primary mental health care, but notes that the ratings for this questionnaire are not universally applicable (de Galvis et al., 2012). This instrument, developed by WHO is sensitive for the identification of mental disorders in general medical services in many countries where it is applied (Beusenberg, Orley, & WHO, 1994). The instrument is useful for identifying mental

disorders including psychotic disorders. However, the instrument only provides very broad categories, and therefore makes it difficult for general practitioners to be specific about their treatment and interventions.

The Symptom-Driven Diagnostic System for Primary Care (SDDS-PC) is a tool for identifying major depression, generalised anxiety disorder, panic disorder, obsessive compulsive disorder, substance abuse, dependence, and suicidal ideation (Broadhead et al., 1995). Working with a computer-assisted programme is certainly an advantage, yet the inclusion of only anxiety and depression limits it value in a routine clinical use.

Of the diagnostic tools, The Provisional Diagnostic Instrument-4 is a brief self-report instrument developed for distinguishing cases of generalised anxiety, depression, mania and ADHD (Houston et al., 2011). The Case-finding and Help Assessment Tool (CHAT) detects the presence of alcohol use, psychoactive drugs use, gambling, depression, anxiety, stress, irritability, and eating behaviour disorders in primary care (Goodyear-Smith et al., 2008).

2.2 Limitations in use of Instruments and difficulties in their Applicability in Primary Care

Despite the wide range of tools described in the literature, they face some practical barriers for their application in primary care. A number of limitations are as follows: (a) instruments that are excessively lengthy for clinical interviews are not suitable being employed in primary care; (b) most scales cover a limited range of symptoms and mental disorders thus missing many other mental disorders; (c) instruments being strictly and specifically developed for research purposes and therefore they fail to take account of realities of their application in routine clinical care ; (d) scales being specific to certain age groups making it difficult for practitioners to find the right one in their busy practice ; (e), and others requiring more than one scale to reach a psychiatric diagnosis putting significant pressure on their time.

There are number of tools that evaluate a patient's mental state, but the selection of the most appropriate one relies on the purpose of that evaluation. For example, in certain populations where the main focus is an early identification of individuals with mental health problems, it may be suitable to apply some screening instruments. On the other hand, if it is for in death clinical and research purposes, then a detailed structured interviews would provide more thorough information for the decision-making process.

The literature review broadly put the tools in to three main categories: screening instruments, clinical assessment instruments, and research tools. The limitations of these instruments along with their relevance in primary care is outlined below:

Many of the instruments developed for the identification of specific disorders (e.g. depression, anxiety, substance abuse, etc.). These tools assess the presence of a particular problem i.e. depression. However presence of depressive symptoms does not necessarily indicate the presence of a diagnosis of depressive illness. For instance, obtaining high scores on the Beck Depression Inventory for Primary Care (BDI) or in the Patient Health Questionnaire-9 (PHQ-9) may be an indicative of a major depressive disorder, but equally reflect secondary depressive disorder associated with a medical or other psychiatric disorder. In this example these three different types of depression require different treatment approaches.. Furthermore, another issue with screening instruments is that owing to their high sensitivity, they can pick up a number of false positives who may not need any interventions.

A study conducted in Argentina to identify major depression in medically-ill patients by using different screening instruments and comparing them with a clinical evaluation (de la Torre et al., 2016) found that the prevalence of major depression was 27% when a psychiatric evaluation was conducted. The only instrument that had similar results was HADS (25%), whereas BDI and PHQ reported prevalence of depression 44% and 56% respectively (de la Torre et al., 2016). These results highlight the risks of making clinical decisions based on results of screening instruments, as there is a risk of over-diagnosing patients and subjected them to unnecessary pharmacological treatments. In relation to the primary care model, general practitioners need to acquire skills of making decisions and solving problems of their patients. They therefore need tools that give them self-confidence in reaching an accurate diagnosis and initiating appropriate treatments.

A comprehensive mental health assessment of a patient may require use of multiple scales to cover all disorders which is not practical in busy routine care. it is therefore necessary to use a tool that covers the whole range of psychiatric diagnoses. Thus, these screening instruments have only limited use in routine clinical care (Romera et al., 2008).

Clinical assessment instruments (PRIME-MD, GHQ, SCL, SDDS, and CHAT) have been proposed for their use in primary care, and help to ascertain psychiatric disorders (Staab & Evans, 2001). There is no doubt that they have several advantages. They help in identifying different mental health problems.. Many self-reporting ones don’t require clinician´s time

and, they can be administered by a wide range of professionals including those with low experience (Samet, Waxman, Hatzenbuehler, & Hasin, 2007). Additionally, they require less time for their administration, i.e. SDDS-PC, if available in computer-aided formats. Computer assisted tools also help us in avoiding data entry errors that can occur when transferring data from paper to databases (Samet et al., 2007).

It is worth noting that not all clinical assessment instruments are designed for making diagnoses. For example, GHQ, SCL-90 and SRQ identify a wide range of symptoms. However, they have no unified criteria for diagnosis. The fact that these are self-reporting scales, also make them questionable in assisting in arriving at an accurate diagnosis.

Research instruments such as MINI, CIDI and SPIFA are used in number of epidemiological studies (de Azevedo Marques & Zuardi, 2008; Navarro-Mateu, Tormo, et al, 2013; Pull et al., 1997; Sartorius, Ustün, Lecrubier, & Wittchen, 1996). These instruments are in a psychiatric interview format where a diagnosis can be made by the interviewer after asking a series of questions to a patient. They have the advantage of thorough assessment of all mental disorders, as well as providing a precise diagnosis. Additionally, they mimic a consultation with a specialist. The limitations however are that the administration of each of them requires from one or more hours. Once the interview is finished, some extra time for scoring is also needed. Last but not least, they are designed to be applied by trained evaluators with extensive clinical training. As a result these comprehensive assessment instruments can't possibly be used in primary care.

2.3 Literature Review: Findings Summary

It is crucial to improve general practitioners' mental illness recognition skills in their clinical practice. This could possibly be achieved by training GPs in mental health with an assistance of using validated clinical tools that are practical and user friendly in their daily practice.

There is a wide variety of instruments and interview schedules available to be used to identify mental illness in primary care. However, they have limitations in the day-to-day clinical practice. Some of them are created for research purposes, whereas others are either time-consuming or cover a limited range of symptoms such as anxiety and depression, predominantly. Most of them leave out a number of psychiatric disorders such as dementia and psychosis.

GMHAT/PC, a mental health clinical diagnostic tool developed in the UK, appears to be comprehensive, yet practical instrument that can easily be adopted in primary care. This tool will be further discussed in detail in the next chapter.

Chapter 3

The Global Mental Health Assessment Tool Primary Care version

GMHAT/PC is a computerised, semi-structured clinical interview that allows us to assess and identify mental disorders in primary care (Sharma, Krishna , Lepping , Bowen , 2013). This tool is comprehensive and easy-to-administer (Sharma et al., 2013).

3.1. GMHAT Development Process

Sharma and Copeland have spent over 15 years in developing GMHAT/PC, in order to assess, diagnose, and treat mental illnesses in primary and general health care settings based on their extensive clinical and research experience (Sharma et al., 2013). These methods which have so far taken 7 years to adapt and develop are the result of many years of testing and developing, and using computer-assisted research diagnostic tools (Sharma, Jagawat, et al., 2010). Many of the GMHAT/PC items have been adapted for the full adult range from the Geriatric Mental State (Automated Geriatric Examination for Computer Assisted Taxonomy) schedule. The latter is extensively used worldwide in numerous epidemiological studies (Sharma et al., 2013).Another psychiatric diagnostic schedule is the Present State Examination (PSE). The PSE schedule is an instrument to record mental status of adult neurotic and functional psychotic patients (Wig, Menon, & Srinivasamurthy, 1982). Each one of these items is rated on ordinal scale. Ratings are based on clinical judgement for which comprehensive glossary is provided (Luria & McHugh, 1974). PSE uses CATEGO programme that consists of ten stages and is capable of reducing 500 PSE items to six descriptive categories in order to have a single principal diagnosis (Wing, Cooper, & Sartorius, 2012).

GMHAT/PC on the other hand uses diagnostic algorithm based on ICD-10 based clinical decision making process. The diagnostic categories mimic clinical diagnosis. The output of GMHAT/PC gives additional diagnoses that are very helpful in planning a comprehensive treatment and management plan taking account of all of patients' problems.

GMHAT/PC has already been translated into a number of languages including that of low- and middle-income countries (Sharma, Jagawat, et al., 2010). As a case in point, this tool has

already been translated into Spanish, Dutch, German, Hindi, Chinese and Arabic. On top of that, the French, Portuguese and Tamil versions are under preparation (Sharma & Copeland, 2009). Further studies are in progress in India, Singapore and Rotterdam (Sharma & Copeland, 2009).

3.2. Description

The assessment tool starts off with provision to record patients' demographic data. After that, the assessment programme starts administering details, acquired from basic instructions, on how to use the tool and rate the symptoms.

The introductory screen facilitates the record of descriptive information in the following fields: current symptoms, relevant issues in the past, family, personal problems, epilepsy background check, and learning disabilities. Subsequent screens are conformed by a series of questions leading to a comprehensive, yet quick mental state assessment focusing sequentially on the following symptoms or problems:

- worries
- anxiety and panic attacks
- concentration
- depressive mood state -including suicidal risk-.
- sleep
- appetite
- eating disorders
- hypochondriasis
- obsessions and compulsions
- phobia
- mania/hypomania
- thought disorder
- psychotic symptoms (delusions and hallucinations)

- disorientation
- memory impairment
- alcohol misuse
- drug misuse
- personality issues
- stressors

From each of these respective subsections, a single question pops up simultaneously. After that, the questions proceed in clinical order following a tree-branch structure. For each of the major clinical disorders there is either one or two screening questions. If the participant does not have symptoms on the initial items of a subsection, the interview moves on to the next subsection.

The questions are scored according to a rating scale as described below.

- 0= No evidence or presence of any symptom
- 1= Mildly distressing or disabling symptoms or present symptoms
- 2= Moderate and frequent symptoms
- 3= Severe and persistent Symptoms
- 8= Interviewer is unsure about the presence or absence of the symptom
- 9= Not applicable or not asked

3.2.1. Rating Scores and Computer Diagnosis

There are 11 symptom groups on which the rating scores are based. They have varying rating scores based on the number of symptom questions associated with that symptom group. The symptom groups and their associated rating scores are as follows:

- Anxiety (0-12)
- Concentration (0-3)
- Depression (0-36)

- Psychosis (0-9)
- Obsessions (0-3)
- Phobias (0-9)
- Mania (0-6)
- Hypochondriasis (0-3)
- Disorientation (0-9).
- Memory (0-6)
- Eating disorder (0-18)

In addition to that, there are sections for alcohol and other drug misuse, stressful events, personality difficulties, and risk assessment.

The main computer diagnosis is derived from using a hierarchical model and planned out following the mechanisms of ICD-10. The diagnostic programme takes account of severity of symptoms; they range from moderate to severe. It also generates alternative diagnoses based on the presence of symptoms coming from other disorders.

3.2.2 The Referral Letter

The printable output summary report entails background descriptive details, a list of symptoms with their severity as well as their scores, risk of self-harm, the GMHAT/PC main diagnosis and additional diagnoses. The additional diagnoses or comorbid states are based on the presence of other mental illnesses' symptoms and disorders.

The programme has its original underpinnings taken from the Delphi (Borland) System, and slightly later, it was transported to a visual basics system that does not need any additional software programming support (Krishna et al., 2009). The website for the tool can be found at http://www.gmhat.org. The elaboration of this website has rendered significant additional technical support hitherto. If interviews are ever repeated over time on a patient, the programme will flag this since it also produces a summary table of symptom ratings of all former interviews. Hence, providing a clear indication of progress between interviews (Krishna et al., 2009).

The interviewer would markedly be benefitted by having some background experience of assessing mental health problems. What is more, it requires little training to become acquainted with the schedule. Dissimilarly, for those who have no previous experience of mental health assessments, a short training package would be necessary (Sharma, Jagawat, et al., 2010).

3.3 GMHAT/PC Training Programme

University of Chester has prepared a training package that can be delivered in one to three days depending upon the mental health background of training recipients. This programme is being rolled out in English, and is planned to run at the university every six months. The programme includes presentations, an outline of all mental disorders, video materials for interview practising on ratings, and live role-plays making use of GMHAT/PC interviews. Alongside these elements, the University is planning to set up other international centres for GMHAT training in various languages. A training centre in central India is already being set up, by way of illustration. They had a successful training programme in March 2013 supported by the Indian Council of Medical Research. With regards to the Spanish version, as the main element of this thesis, once a thorough fulfilment of the validation process is accomplished, the University intends to set up a GMHAT/PC Spanish training centre in Colombia.

3.4. GMHAT/PC Validation Studies

Various studies have been dedicated to assess the psychometric properties of this tool showing results that acknowledge and recommend its implementation with different populations (Sharma et al 2004, 2008, 2010, 2013). Furthermore, GMHAT/PC-based diagnoses showed consistently good agreement with International Classification of Diseases, and 10th Revision (ICD-10)-based clinical diagnoses made by psychiatrists in various studies (Sharma et al., 2013). It also shows reliability and validity amongst different psychiatrists using HADS scores as a parallel element (Sharma, Jagawat, et al., 2010).

A summary of the outcomes obtained from validation studies carried out are presented.

Setting sample	GMHAT/PC Interviewer	N=	Agreement (Kappa)	Sensitivity	Specificity	Time taken (min)
Primary care and Mental health (Sharma et al., 2004)	GP	119	0.5-1	0.86	0.96	13
Various (Sharma et al., 2008)	Nurses	215	0.76	0.84	0.92	14.6
General Health (Krishna et al., 2009)	Nurses	118	0.76	0.73	0.98	13.9
Various (old age) (Sharma, Krishna, et al., 2010)	Nurse/ Trainee psychiatrist	169	0.72	0.77	0.96	14
General Hospital (Hindi version) (Sharma, Jagawat, et al., 2010)	Psychologist	82	0.96	0.94	1	16.3
Mental health (Arabic version)(Sharma, Sawa , Copeland, Abou-Saleh, Lane, 2013)	Nurses	50	0.91	97	94	ND

Table 10. Summary of GMHAT/PC diagnosis compared with Psychiatrists' ICD.10 based clinical diagnosis.

3.5. GMHAT/PC Use in Medical Settings

GMHAT/PC has proved itself to be one of the most useful instruments in various medical settings not only concerning the assessment of mental disorders but also, to calculate the prevalence of mental illnesses in somatic patients. There is countless evidence on how this topic keeps on expanding. As a matter of fact, a study carried out in India used the tool to diagnose psychiatric morbidity in chronic respiratory disorders (Sharma et al., 2013). Also, there have been studies in other medical settings including cardiac and epileptic patients (Krishna et al., 2009)

The diagnosis of comorbidity made by the GMHAT in different settings is showed:

GMHAT diagnosis %	Respiratory diseases(Sharma et al., 2013)	Cardiac diseases (Krishna et al., 2009)	Epilepsy (personal communication)
Anxiety	20.2	4.4	1.7
Depression	13.3	14.4	0.6
Psychosis	2	0.8	4.5
OCD	4.6	ND	1.7
Phobia	1.8	0.8	1.1
Personality disorder	1.5	ND	7.3
Hypochondriasis	0.8	ND	ND
Stress	0.3	0.8	ND
Organic	0.3	0.8	18
Alcohol abuse	ND	ND	2.3

Table 11. Mental health disorders in different medical settings using GMHAT

3.6. Summary

GMHAT/PC is a semi-structured computer assisted clinical interview that has advantage of flexibility and adaptability over structured interviews. It is fairly comprehensive clinical tool to cover wide range of mental disorders. . GMHAT/PC incorporate the complete mental state examination in order to differentiate affective disorders, thought disorders, and cognitive impairment (Snyderman & Rovner, 2009). Similarly, it is worth adding that GMHAT/PC is presented as an aid to health care professionals for brief mental health assessments that would help them detecting mental health problems in primary care, help them or ask for specialist help if they can't manage them.

Chapter 4

Relevance and Need for Spanish Version of GMHAT/PC

4.1 Primary Care in Colombia and Latin-America

The model of providing services for mental illnesses through primary health care has been recognised by the health authorities of different countries as well as by the WHO. This however remains a challenge even in high-income countries, let alone middle and low-income countries. The WHO proposed that each country constructs its own strategy for primary care in accordance with their economic, political, administrative capacities, and historical development of the health (Giraldo & Vélez , 2013). An emphasis on developing primary health care as the core of health systems, has emerged in Latin America (Giraldo & Vélez, 2013). Governments have made a commitment to renew this strategy to strengthen primary health care as the basis of their health systems (Giraldo & Vélez, 2013).

In Colombia, the Ministry of Health and Social Protection is in charge of a model of public health within the framework of primary health care strategy. That includes the promotion of work based on social determinants of health as well as encourages community participation in their health delivery processes (Giraldo & Vélez, 2013).

There is a series of obstacles that prevent the access to healthcare in Colombia and Latin-American countries. The health delivery institutions are generally undergoing financial difficulties (Girón, 2015). Additionally, poor availability and access to care, unsatisfactory professional and technical quality, lack of continuity of care, and inefficient utilisation of scarce resources are other reasons of poor health care delivery (Vargas et al., 2015). These difficulties pose particular challenge the care of patients with chronic conditions that require coordination of multiple health professionals, and care settings (Vázquez et al., 2015). The best way to tackle these issues requires a better distribution of care resources, as well as fostering an innovative approach for prevention and early intervention at primary care level.

In Colombia and Latin-America, care is prioritised by levels of complexity. That is to say, primary care provides the entry point and takes the role of the patient's care coordinator. Whereas secondary services provide advisory and supporting roles (Vargas et al., 2015). In

these countries, the vast majority of people with mental health problems have their very first contact with primary care physicians. It is therefore important to establish systems that help doctors in identifying people with mental health problems at the earliest opportunity at primary care level, and provide them with knowledge and training on appropriate interventions. Such mental health training of primary care health doctors and providers can be given based on GMHAT/PC. In the mental health training the use of GMHAT/PC has been found to be promising in different countries where it has been evaluated so far.

4.2 Need for Spanish Validated Tools for Mental Disorders

Some people may argue that every country has to create its own assessment methods or instruments taking account of cultural and language differences. Measures of psychopathological symptoms leading to a diagnosis have been especially criticised for their universal application (Bhui, Mohamud, Warfa, Craig, & Stansfeld, 2003). Broadly speaking, they evolve an attitude of rejection towards using other internationally-accepted tools for that reason. However, all cross-cultural studies using internationally-accepted diagnostic methods such as SCAN, CIDI or MINI found that these diagnostic tools accurately detect mental illnesses in all cultures (Goldberg & Lecrubier, 1995; Kohn et al., 2005; Pull et al., 1997). There may be variations in prevalence of mental disorders in different countries. For example, in a transcultural study carried out by the WHO in the primary care, attendees of 14 different countries employing the same diagnostic criteria by applying the CIDI (Goldberg & Lecrubier, 1995), found that the overall prevalence score of mental illness meeting ICD-10 criteria was 24%. Nonetheless, it ranged from a high of 52.5% in Santiago de Chile to a low of 7.3% in Shanghai (Goldberg & Lecrubier, 1995).

An international instrument taking into account cultural and language sensitivities, following a properly carried out validation in that culture, could easily be used in the respective country (Sanchez & Echeverry, 2004). In brief terms, the creation of a new tool is time-consuming and expensive. This is because it has to go through the same rigorous validation process in any case. It is therefore convenient and sensible to translate, adapt and validate an existing international tool, especially in low-to-middle income countries. The added value of this exercise is that using the same tools provides useful data and information for cross-cultural and international comparisons. Additionally, international data based on studies make the instrument more robust by confirming its psychometric properties in different cultures.

As a result of the resource and time constraints, some primary care centres in Latin-America use in practice translated tools without properly checking the validity of Spanish translated versions. The best practice proposes a systematic and thoughtful process of translation and adaptation, piloting items and administration instructions with intended users in the new language, and collecting and reporting data that can form the basis for assessing reliability and validity of the newly-translated measure (Kassam-Adams et al., 2013).

Various screening questionnaires tests and tools have been established to identify psychopathology. A great number of these tools were developed in English-speaking countries. These English tools can't be used in identifying and treating monolingual Spanish-speaking patients and families (Castro, Billick, & Swank, 2015). The benefits of having Spanish validated tools have been highlighted even outside Latin-America. There is also a need for mental health screening in Spanish-speaking populations given the continued growth of such population in United States and Europe with increasing complex demographic structure, and ethnically diverse populations (Castro et al., 2015). Thus, it is important to develop a Spanish version of mental health diagnostic tool that can be used not only in Spanish-speaking countries such as Latin America and Spain, but also in Hispanic communities in the USA and the rest of Europe.

4.3 Tools Used in Colombia and Advantages of GMHAT/PC over Other Tools.

In Colombia, every institution has the freedom to choose the most convenient tool for mental health assessment. However, the Ministry of Health has encouraged the use of some validated instruments.

The Composite International Diagnostic Interview (CIDI) is a standardised-structured interview developed by WHO to give psychiatric diagnoses according to ICD-10 and DSM IV (Goldberg et al., 2012; Kessler et al., 2013; Quintana et al., 2004). This interview was employed by the Mental Health National Study in 1997 and 2003 (Posada, Aguilar-Gaxiola, Magaña, & Gómez, 2004). CIDI demands longer times for its administration, though. They also require extensive training both on how to administer and rate various symptoms. As a result, it has not been adapted in clinical practice within primary care setting (Staab & Evans, 2001).

In 2015, the Ministry of Health commissioned a new Mental Health National Study. The chosen instruments and scales were as follows:

- Health and Work Performance Questionnaire (HPQ)
- Composite International Diagnostic Interview - computer assisted (CIDI-CAPI)
- Diagnostic Interview Schedule for Children (DISC IV-P)
- Self-Report Questionnaire (SRQ)
- Reporting Questionnaire for Children (RQC)
- Alcohol Use Disorders Identification Test, (AUDIT)
- Mini Mental State Examination (MMSE)
- Euroqol Five-Dimension Questionnaire (EQ5D)
- Time Trade-off; Alcohol, Smoking and Substance Involvement Screening Test (ASSIST)
- Post-traumatic Stress Disorder Checklist, version C (PCL-C)
- The Eating Attitudes Test (EAT)
- and Bulimia Test (BUILT) (Gomez et al, 2015).

All instruments were condition specific except for CIDI. It is not practical to use CIDI in routine clinical practice especially at primary care level.

Thus far, computer-assisted semi-structured clinical interview tools such as GMHAT/PC are not validated in Colombia. As a matter of fact, most tools that are currently used have some validity, and a large number of them are paper-based rating scales or interview schedules that have been used mainly for research studies. GMHAT/PC, on the other hand, is primarily developed for clinical purposes. It has the ease of describing the problems reported by the patient, as well as recording and rating symptoms using the practitioner's clinical judgement based on all the information available to him. As a result, the process of clinical assessment using GMHAT/PC is very close to what is ideally expected of a mental health professional and yet can be done by primary care health workers. The added advantage of obtaining the output in a document form with descriptive details, measurement of symptom groups, and all diagnostic possibilities puts it, to some extent, ahead of all the other tools available so far.

It is therefore immensely advantageous to translate, adapt, and validate GMHAT/PC in to Spanish to assist in providing ICD-10 based diagnosis in day-to-day practice in primary care and general health settings in Colombia. The researcher and the author of this thesis (PT) had

an opportunity to participate in the development of Spanish version of GMHAT/PC right from the outset. As a result, the author has taken into account adapting GMHAT/PC to meet the needs of Spanish-speaking countries, especially that of Colombia. The results of this study will, therefore, be relevant to plan and improve clinical care of people with mental disorders in primary care settings, as well as further planning public health interventions in Colombia.

It is worth noting that the development of Spanish version of GMHAT/PC led by Tejada was in close association with a Spanish Psychiatrist (Dr H.F. from Spain) working in the UK. This was done to make GMHAT/PC Spanish version applicable to all parts of the world. Keeping that in mind, the training videos were therefore made by both Colombian (Tejada) and Spanish (H.F.) psychiatrists.

Tejada's presentations of development of GMHAT/PC Spanish version in the World in WONCA Family Medicine World Congress in Prague in 2013 and WPA World Congress 2014, attended by a number of European Spanish speaking family doctors and mental health specialists were very much appreciated the discussion followed highlighted an urgent need of such a tool to be available in Spanish for the use of family doctors not just for Latin America but equally for Spanish speaking Europe.

Cost-Font et al (2008) in their review on challenges of reforming mental health services in Spain highlighted several issues. Lack of integration of services and low priority for mental health were the main obstacles. They also reported the adverse impact of poor mental health service provision on overall physical health and social services provision. An early detection of mental illnesses by family doctor and their proper treatment in coordination with specialists' services is a right answer. GMHAT/PC Spanish version will have a great potential in enabling family doctors and primary care health workers in diagnosing and treating mental health problems adequately.

A development of mental health training programme in Spanish around GMHAT/PC will be necessary and Tejada has already started developing a comprehensive training manual in Spanish to provide a two days training to front line workers. Her experience of training GPs as a part of this study has been very encouraging. The training in Spanish was very well received by the GPs and felt that such training will be very valuable for other front line workers in the future.

Chapter 5

Research Methodology

This study method outlines the details and rationale of developing Spanish version of GMHAT/PC, testing its reliability and validity and testing its feasibility in a routine health care system. The methods used in Spanish adaption of GMHAT/PC, testing its reliability and validity and feasibility are in line with methods widely accepted by academic communities and used in development of other mental health tools.

5.1 Aims of the Study

The main aim of the present study is to assess the reliability and validity of the Spanish version for Global Mental Health Assessment Tool /Primary Care in Colombia.

The secondary aims of the study are:

i) Establish the feasibility of the Spanish version for Global Mental Health Assessment Tool /Primary Care (GMHAT/PC) for use in day-to-day clinical practice.

ii) Establish the feasibility of using GMHAT/PC in general hospital settings to detect metal illnesses present in medically-ill patients.

This study was planned in two parts to meet the above objectives. The main study primarily focuses on (after developing GMHAT/PC in to Spanish) examining the reliability and validity of the Spanish version of GMHAT/PC.

Once the validity established, a second study is proposed to establish its feasibility by finding out how GMHAT / PC can be used in a real clinical situation and how it is accepted by general practitioners and patients and how useful it is within a general medical setting.

The methodology of the two studies is outlined as follows.

5.2 Study Design of the Main Study

The study design is outlined in the following sections. This included the development of the Spanish version for GMHAT/PC, training and testing the reliability of the General Practitioners who used GMHAT/PC in this study, testing the validity of the Spanish version for GMHAT/PC, and finding out about the feasibility of using GMHAT/PC in routine use.

5.2.1 Development of the Spanish Version for GMHAT/PC

The development of the Spanish version of GMHAT/PC began by initially translating the English GMHAT/PC items into Spanish, checking the authenticity of the translations and its relevance in routine clinical practice, as well as preparing training material including training videos making use of the Spanish version.

5.2.1.1 Translation of Spanish Version of GMHAT/PC

To carry out the translation process of GMHAT/PC from English into Spanish, we followed the recommendations outlined for cultural adaptation of mental health measures (Bhui et al., 2003). These are outlined below:

1. Translators must have sufficient experience. They have to understand both the original and the target language, and have a thorough knowledge of the cultural understanding of mental distress and disorder.
2. Choosing translators who have learnt the language of the original version as a second language, in preference to those who use the source language as their dominant language.

The parts considered for the translation and cultural adaptation of the scale were the following:

1. Obtaining an official authorization by the authors of the instrument for the implementation of the study: the entire process was carried out directly with Dr Vimal Sharma, one of the developers of GMHAT.
2. Translations into the Spanish Language: Firstly, an initial translation was carried out by a Spanish psychiatrist with knowledge of the English. Later on, the author Tejada, revised the translation, and translated Spanish instructions for interviewers, Spanish diagnoses names, identification data and a Spanish template of final outcomes.
3. Comparison of translations: both translations, generated in the previous step, were compared and evaluated in a coordinated meeting. It was attended by the developer of the tool Dr Vimal Sharma, personal researcher and PhD candidate Tejada and a Spanish psychiatrist, Dr Ferrán who lives and works in the UK. The decision to include the latter was based on the judgement that, albeit the present study was carried out in Colombia, the goal is to have a tool that can be used with minor alterations in all Spanish-countries speaking.

After this three-folded procedure, a mutual agreement amongst translators was achieved in order to set a unified version. For each and one of the cases contained in the instrument, the

panel was satisfied that the versions had an easy-to-understand language for all kinds of patients i.e. from different social class as well from different regions. Yet a preservation of technical, semantic and content equivalence of English version was retained. At this stage, a preliminary version of the instrument, ready to use in the next stage was reached. In general, in the evaluation process of translation, there was a firm agreement among those attending the meeting. A few minor alterations were encountered, and they are described as follows:

Would you be happy if I use a computer to help me asking questions to make an assessment of mental health issues?	In Spanish the word computer is translated as "computador", but in Spain is known as "ordenador". Both terms were kept.
Restless feelings (butterflies) in stomach	The equivalent expression for this in Spanish is "mariposas en el estómago", and it's used in some countries, but in others it can be literally interpreted as having insects in the stomach. Thus, another equivalent expression "hormigueo (tingling)" was included.
Have you suffered from any withdrawal symptoms such as shakes, blackouts, DTs, fits, etc.?	In the Spanish-speaking world, people are not familiarised with the expression *DT* nor the term *Delirium Tremens*. For this reason, in the Spanish version it was changed for the term *abstinence* -when quitting drinking, and then the symptoms are described.
Do you take any other drugs not prescribed by a doctor (illicit drugs)?	It was changed to the question: Do you often use drugs? Because in Spanish it is understood that it is making reference to psycho-actives

Table 12. Alterations encountered in the GMHAT/PC English to Spanish translation process

4. Reverse translation from Colombian Spanish into English: This step was omitted as the panel had psychiatrists who translated the GMHAT/PC items from English to Spanish and were fluent in both the languages.

Guyatt (2007) proposes that the cultural adaptation of a tool should take into account two aspects: the linguistic evaluation and the psychometric evaluation (Guyatt & Patrick, 2007). The standardized steps to be followed for the linguistic validation of vary, depending on whether the scale is translated from another language or whether it is developed in the original language (Wild et al, 2005). These were taken in to account in Bhui's recommendations as outlined above.

Lorn et al. (1996) and later Terwee et al. (2007) defined and reviewed some of the aspects considered important for validation studies: reliability, validity and feasibility. These were the criteria that were taken into account in the methodology of this thesis.

5.2.1.2 Further Development of GMHAT/PC

One important aspect added in the GMHAT/PC was the diagnosis of Post-Traumatic Stress Disorder (PTSD). Alongside the developer of GMHAT/PC (VKS), we came up with an additional screen to include PTSD related questions. The PTSD screen and diagnosis were later added up to all of the other language versions of GMHAT/PC. The translation of the screen followed the same aforementioned procedure. This process is explained in chapter 6.

5.2.2 Training and Inter-Rater Reliability

Tejada received training in using GMHAT/PC at the main GMHAT learning centre in the UK. She also attended 'Train the Trainers Course' organised by the University of Chester to be a GMHAT/PC trainer in Colombia. Furthermore, she was present in several clinical interviews with VKS - the developer of GMHAT/PC himself. She rated video interviews as well. Both clinical and video-based interview ratings confirmed good inter-rater agreement between the author's ratings and those of the developer (gold standard).

Following extensive training, the author proceeded to record four GMHAT/PC training videos in Spanish. All the recording was performed by the media unit of the University of Chester. Similarly, psychiatrist (J F) who worked on the GMHAT/PC translation also interviewed three Spanish-speaking individuals making use of different mental illness scenarios. These volunteer participants were Colombian students who were pursuing their MBA at the University of

Chester. Each candidate was assigned a role as a patient and was given a description of the characteristics associated with each diagnosis. This permitted that at the time of filming, the performing individuals not only responded adequately to the examiner's questions but also, demonstrated the non-verbal behaviour (facial, motor behaviour, tone of voice) corresponding to the assigned diagnosis.

Each video had a complete clinical interview following the Spanish version of GMHAT/PC, and covered one or two plausible diagnoses. The diagnoses covered in these videos included depression, anxiety, severe depression with psychosis, and no mental illness. It is worth noting that these videos were used for training in Colombia and are expected to be used in future training sessions.

The author trained two general practitioners (GPs) to use the GMHAT/PC Spanish version in the cities of Bogotá and Neiva in Colombia. First of all, they attended a training session understanding the background and purpose of using GMHAT/PC, as well as the technical know-how to use the tool. After the training session, four patients were interviewed by the investigator and side by side they were rated by these GPs too. This gave them an opportunity to learn how to use GMHAT/PC -as it formed part of the practical training in using GMHAT/PC), but more importantly to establish the inter-rater agreement between the investigator and the GPs. The method applied to establish inter-rater reliability was recurring to recorded interviews where GPs sat in the interviews together with the investigator and made their independent ratings (Quintana et al., 2004).

The inter-rater reliability measures how similar are the scores –*measurements*, given by different investigators –*raters*- to the same phenomenon. If evaluators interview the patient separately, they will have lower reliability scores as opposed to if they rate them simultaneously. (Sánchez & Gómez, 1998). Consequently, it is deeply recommended that all evaluators involved in the measurements have the same level of academic training and experience (Sanchez & Echeverry, 2004).

5.2.3 Validity

The main focus of this study is to evaluate the validity of the Spanish version of GMHAT/PC.

There are different types of validity (Sanchez & Echeverry, 2004; Sánchez & Gómez , 1998) as it can be seen hereunder:

1. Face validity: Refers to whether the items appear to measure correctly what they are supposed to measure. This type of validity has a doubtful ability of the tool to provide correct measurements. This is because it simply seeks to achieve greater acceptability among the respondents. To carry out this type of validity one can use a group of patients and experts in the field. This group then decides whether the scale, in appearance, measures the characteristics, and if it actually does what it meant to do.
2. Content validity: This type of validity assures that each of the domains that make up the whole scale accurately measures its represented area. Principal domains generally tend to have a larger number of items. To evaluate this type of validity one uses a group of experts who assure that each domain is adequately represented.
3. Criterion validity: To establish this type of validity the proposed tool or measure is contrasted with a Gold Standard, which is generally the oldest and best known measure for its good quality that has universal acceptance. In this study, the Gold Standard was an ICD-10 based clinical interview made by psychiatrists with a good deal of clinical experience. This validity is also called concurrent validity.

This study examines psychometric properties of the Spanish version of GMHAT/PC in some detail. In the first instance, the study looked at the sensitivity and specificity of the tool.

The study included participants ranging from those who were in remission to those who were had symptoms of severe mental illness. They were recruited from in-patient and out-patient mental health settings. After that, those in the mental health setting were expected to have a wide range of psychiatric diagnoses i.e. anxiety disorders, depression, psychosis, bipolar affective disorder, organic mental disorders, and other diagnosis. The study aimed at having approximately 50 patients with each of these diagnoses to form a sample of roughly 300 patients. In order to make the sample as similar as plausible to the clinical reality that doctors and psychiatrists have to face, no patient was excluded based on their clinical status. This meant that patients with one or more diagnoses were included. This included recruiting patients with acute symptoms, in remission, patients with unspecified diagnoses, as well as patients with cognitive impairment etc. This decision was also based upon the fact that the general practitioners and/or psychiatrists must assess the whole range of patients.

The study participant GPs had a thorough training prior to carrying out study interviews. All patients who were interviewed by GPs using Spanish version of GMHAT/PC –*participants*- were interviewed independently by psychiatrists with a good deal of clinical experience, similar to the level of their consulting counterparts in the UK, who were unaware of the GMHAT/PC

diagnoses. They went on making ICD-10 based clinical diagnosis. The GMHAT/PC diagnosis and the psychiatrists' ICD-10 based clinical diagnosis were compared to examine the agreement.

5.2.4 Feasibility

Feasibility refers to the applicability of the instrument in the real scenario. This includes whether the instrument takes the average time as expected or not. Thus, some common questioning remarks are: can that be used in normal clinical settings or can staff with a minimum required professional qualification make use of the instrument in a reliable manner (Sanchez & Echeverry, 2004). More importantly one has to establish whether the instrument is acceptable to patients and clinicians or not.

Following this stage, patients were given a feedback questionnaire. The interviewers were also asked to give their feedback with regards to GMHAT/PC usage. It is worth highlighting that the tool has an in-built facility to record the time taken during each interview.

Given that the feasibility is a very important part of the validation process, it was decided to conduct an additional study using the Spanish version of GMHAT / PC applied on a general medical population. This study will be discussed in section 5.5.

5.3 Instrument

Throughout the present study it has been outlined that GMHAT/PC is a computerised-clinical assessment tool developed to assess and identify mental health problems in primary care. Also, how the first screen is dedicated towards data of the patient, and administration of the programme. The assessment instrument begins with some basic instructions providing details of know-how to use the tool and rate the symptoms. After that, the introductory screens facilitate inputting of descriptive information in the following fields: current symptoms, relevant past, family, and personal problems.

The following screens consist of a series of questions leading to a comprehensive, yet rapid mental state assessment focusing sequentially on the following symptoms or problems: worries; anxiety, panic attacks, concentration, all-time depressive mood including that pointing towards a suicidal risk, sleep, appetite, eating disorders, hypochondriasis, obsessions and compulsions, phobia, mania/hypomania, thought disorders, psychotic symptoms (delusions and hallucinations), disorientation, memory impairment, alcohol misuse, drug misuse, personality problems, and stressors. One question at a time appears from these respective subsections. The

questions proceed in clinical order along a tree-branch structure. For each of the major clinical disorders there are one or two screening questions. Then, the interview moves on to the next subsection, if the patient does not have symptoms based on the screening items of a subsection.

Eventually, at the very end of the interview the screen asks to input the interviewer's details and the clinical diagnosis. The screen then proceeds to a menu showing the following items: a) rating scores and computer diagnosis, b) assessment, and c) referral letter.

The main symptom groups on which the rating scores derive from are anxiety, depression, concentration, eating disorder, hypochondriasis, phobias, obsessions, mania, psychosis, memory impairment and disorientation. In addition to this, there are sections for alcohol and other drug misuse, stressful events, and personality difficulties.

The main computer diagnosis has its foundation on using a hierarchical model and designed around ICD-10. The diagnosing programme takes into account the severity of symptoms that range from moderate to severe. It also generates alternative diagnoses based on presence of symptoms of other disorders.

The referral letter option prints out a letter of assessment with details of problems, symptoms with severity, and clinical diagnosis. Moreover, it includes an assessment of self-harm risk.

5.4 Ethical Considerations

Ethical approval was obtained from the Faculty Research Ethics Sub-Committee (Reference number RESC1012-365) (see Appendix 1 and 2). There were two main ethical considerations in this study: the consent and the confidentiality.

5.4.1 Informed Consent

The purpose of the study and all the procedures involved were given in written form and explained verbally to all potential participants. Prior to participation, all subjects gave informed consent on forms approved by the Research and Ethics Committee in compliance with resolution No. 8430/1993 from the Colombian Ministry of Health regarding research with human subjects. Only those who gave valid written informed consent were included in the study (see Appendix 1). In the case of minor patients with cognitive impairment or psychotic symptoms that impede the understanding of the form, they had the informed consent filled in by their companions.

If the GMHAT/PC interview identified any mental illness in the participant that needed treatment, the interviewer referred the participants to appropriate agencies after obtaining his or her consent. Participation in the research project was entirely voluntary. The subjects did not receive any payment whatsoever for their participation in the study.

5.4.2 Confidentiality

The group of GPs were provided with written details in Spanish describing the project. They had regular meetings with the leading investigator if they needed to remain re-assured from any aspect of the research. Once enrolled in the study, each participant received a numeric identification code. The researchers did not enter any other identifiable personal data onto the computer to protect participants' confidentiality.

5.4.3 Data Protection

The Data Protection Act (DH, 1998) emphasises that researchers are responsible for ensuring compliance with the Act, in relation to data storage and the way in which access to data is managed (Royal College of Nursing, 2009). It is recommended that all confidential data should be stored in a locked cabinet, with authorised access. In this study, the results of the interviews were stored in a secure computer. None of the potential identifiable information is utilised in neither presentations nor publications, including this thesis. Research participants were fully aware of these details and reassured that any data pertaining to them is safe.

5.4.4 Right to withdraw

According to the research ethics, formally recruited research participants have the right to withdraw from a research study, without prejudice and without impact on their care. This should be made explicit to the participant at the start of the research – usually when informed consent is obtained (Royal College of Nursing, 2009). In this study, participants were free to withdraw consent at any time, without giving any reason, without medical and legal rights being affected.

5.4.5 Potential benefits

Those who enter research should be fully informed of the research aims and potential benefits and harms, giving their consent voluntarily.

In this study two potential benefits were identified for patients:

- Contribute to research that may help others in the future. Having new and better tools for assessing mental health will help bridge the gap between those who have a psychiatric disorder and the help they receive.
- Feeling that you are actively involved in your own health care. Deciding to participate in a study can make some people feel more controlled about their situation, which can lead to a more positive attitude and a better quality of life.

5.4.6 Potential harms

In this study, no intervention or intentional modification of the biological, physiological, psychological or social variables of the individuals who participated in the study was made as it was based on clinical interviews. For this reason it is considered an investigation without potential harms for the patients.

5.5 Use of the Spanish Version of GMHT/PC in General Hospitals – Additional Study´s Methodology

A tool is really useful only when it can determine its clinical applicability. It is not enough to have an instrument with adequate psychometric properties if it is not practical for those who will use it. That is why; an additional feasibility study was carried out to answer the following questions:

- Can the Spanish version of GMHAT / PC be used in a general clinical scenario?

- Will it be accepted by patients and general practitioners?

- Can it be used by a general practitioner with brief training?

- What is the average time taken in using this in general health setting?

The study was observational and cross-sectional, involving one hospital in the city of Neiva, Colombia. The Hernando Moncaleano Perdomo University Hospital is a high complexity unit that receives referrals from a large part of southern Colombia. It counts on out-patient and in-patient services in a handful of specialities. The hospital operates in the metropolitan area of Huila, which has a 1 M population, and particularly serves low-income patients.

The study protocol was approved by the Ethics Committee of the herein participating hospital. The subjects provided written and informed consent. The author proceeded to recruit patients

who were hospitalised in Internal Medicine, Surgery and Gynaecology and Obstetrics (G/O). All consecutive hospitalised patients owing to a general medical illness over a one-month period were eligible for the study. The diagnosis of a medical illness was provided by specialists in each service. Potential subjects were excluded if they were unable to participate in clinical assessments or to complete symptom-ratings because of an illness, medication, sensory or speech impairment.

The author planned to interview at least 300 patients in order to get a sufficient number of participants in different subgroups of medical illness to find a meaningful feasibility of using GMHAT/PC as well as finding psychiatric morbidity data in this population. The sampling was a convenient one reflecting patients with medical, surgical or G/O disorders who sought specialised help in hospital as in-patients.

One of the GPs trained in the validation study collected demographic and descriptive data, and conducted a psychiatric assessment of all the participants using GMHAT/PC- Spanish. The interview was carried out at patients' bedside.

5.6 Summary

The study aims to assess the reliability, validity and feasibility of using a computer-assisted diagnostic interview by GPs. The study examines the level of agreement between the Spanish version of the GMHAT/PC diagnosis and psychiatrists' ICD-10 based-clinical diagnosis. This study included participants who had a whole range of symptoms. They were recruited from in-patient and out-patient mental health settings. Those in the mental health setting were expected to have wide range of psychiatric diagnoses e.g. anxiety disorders, depression, psychosis, bipolar affective disorder, organic mental disorders, and other diagnosis.

All consecutive patients were interviewed using GMHAT/PC and, side by side, psychiatrists made a diagnosis applying ICD-10 criteria. In the additional study, the researcher recruited patients who were hospitalised at the services of Internal Medicine, Surgery and G/O during a period of one month for each service. The diagnosis of a medical illness was supported by specialists in each service. A trained GP conducted a psychiatric assessment of all the participants using Spanish version of GMHAT/PC.

The next flowchart resumes the methodology of the study:

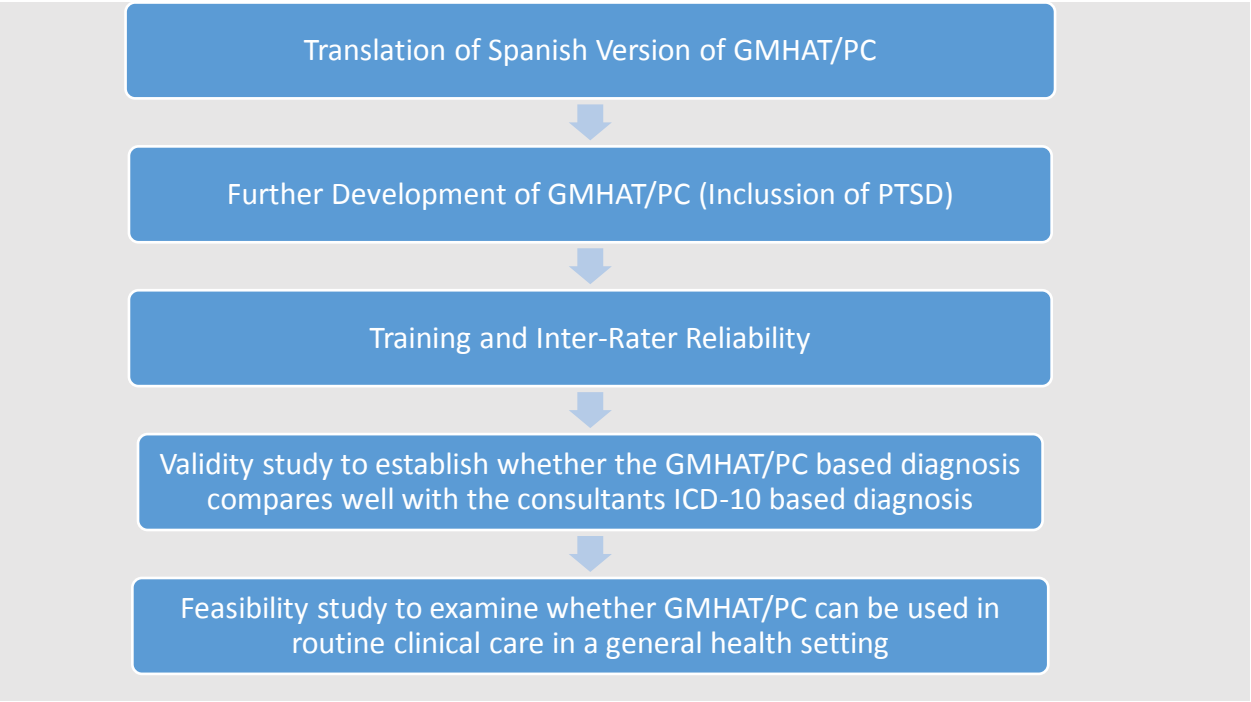

Figure 7. Summary of the methodology of the study

Chapter 6

Post-Traumatic Stress Disorder

6.1 Violence in Colombia

According to the National Historical Memory Center, between 1958 and 2012, the armed conflict has killed 218,094 people in Colombia. The same numbers of necropsies have had to carry out by the National Institute of Legal Medicine in this same context of sociopolitical violence, without, of course, discounting the violent deaths that have left common crime and organized crime.

In 2014 a process of negotiation with the FARC guerrilla group was carried out. The signing of the agreements allowed the abandonment of the arms and the incorporation into the civil life of this guerrilla group. This implies a change in the problematic of the country giving way to the recognition of other forms of violence.

In 2015 the National Institute of Forensic Medicine and Forensic Sciences conducted 126,803 examinations for interpersonal violence; Compared to 2014, there was a reduction of 5.8%. The national rate was 263 injured per 100,000 inhabitants, the lowest of the last 10 years (Forensis, 2015).

The vast majority of those injured were men between the ages of 20 and 24, mostly single. Of the people in vulnerable condition, 43.38% are consumers of psychoactive substances (drugs, alcohol, etc.). 32% of the victims were attacked by people without any relationship with the perpetrator (Forensis, 2015).

CASE 1

20 year old man consulted for anxiety. Symptoms of three years of duration following the assault. It resulted in flashbacks, hyperarousal, social anxiety, decreased appetite, and weight loss; locked him-self up at home, had fear of walking alone and fear of sitting with someone on the bus and suffered nightmares. Symptoms were treated with escitalopram for 6 months with only partial improvement. He sought consultation again.

According to the National Institute of Forensic Medicine and Forensic Sciences, during the year 2015 there were 26,985 cases of interfamily violence in Colombia, of which 10,435 cases corresponded to violence against children and adolescents, with a rate of 67.47 per 100,000 inhabitants; 1,651 cases of violence against the elderly adult population, with a rate of 30.94; And 14,899 cases of violence among other relatives, with a rate of 54.38 (Forensis, 2015).

In the case of violence against children, the alleged perpetrator corresponded to parents in similar proportions. In all cases, the father represented 32.88% and the mother 30.69%. In cases of violence against the older adult population, 38.42% were allegedly committed by the child. For cases of violence among other relatives, it was recorded that in 25.74% of the cases, the alleged perpetrator was the sibling, followed by 16.85 by the brother-in-law (Forensis, 2015).

According to the National Institute of Forensic Medicine and Forensic Sciences, during 2015 there were 47,248 cases of intimate partner violence in Colombia. This represents a rate of 119.24 per 100,000 inhabitants and 1,601 fewer cases than in 2014. However, this type of violence has had a steady trend since 2005 (Forensis, 2015).

Women are the population most affected by this type of violence (86.66%) and in 47.27% of cases, the alleged perpetrator is their permanent partner and 29.33% are their former partners. Regardless of sex, 43% of all victims were concentrated in young people between the ages of 20 and 29 (Forensis, 2015).

During the year 2015, 22,155 legal medical examinations were carried out for alleged sexual offenses, with a rate of 46 cases per 100,000 inhabitants and an increase of 1,040 cases with respect to the previous year, with women being the most affected, at 85.2% (Forensis, 2015).

On average during this period 60 daily evaluations were performed. According to the age distribution, the mean age of the victims was 12.45 years and the modal age was 13 years. According to the distribution by sex, the mean age of the men evaluated was 9.73 years and in the women 12.93 years. The group most affected was the 10 to 14 years (Forensis, 2015).

Case 2

A 21 year old woman allegedly suffered sexual abuse under the effects of poisoning. She did not consult the doctor at the time of the incident. Three months later she consulted to rule out sexually transmitted infections. She neither reported what happened to the doctor nor told her family about the incident. She later had difficulties

in concentrating on her studies, became quieter, lost her appetite and started crying on trivial matters. She had recurrent memories of what happened. She increased drinking in the company of a friend also was also a victim of abuse. With feelings of hopelessness and low self-esteem she attempted suicide. When seen by psychiatrist she reported flashbacks, fear of men, feelings of guilt and sleeplessness.

6.2 Post-traumatic Stress Disorder

Colombia has experienced an internal armed conflict in the past 50 years. In the last two decades it has not only increased, but spread out all over the country. The risk of dying and falling ill as a victim of war has intensified significantly in recent years. Sadly, the same reality goes for forced displacement and poverty amongst affected communities (Pérez, Fernández, & Rodado, 2005). Almost all Colombians have experienced in their lives some kind of experience in relation to violence, not only generated by socio-political problems of the country since the 50s (associated with the emergence of the guerrillas, drug-trafficking and para-militarism) but also, with the violence generated in homes and on the streets (Alejo, Rueda, Ortega, & Orozco, 2007). The National Mental Health Study reported that the traumatic events most frequently showed up in adults are enlisted in this specific order: accident, organised or common crime, armed conflict and domestic violence, whether physical, psychological or sexual (Gomez-Restrepo et al., 2015).

The reactions to stressful situations include anxiety, light-headedness, memories of trauma and impaired attention. A stress disorder differs from normal reaction for its greater severity, diversity of symptoms and impaired social functioning (Pérez et al., 2005). The acute stress disorder occurs in the first month (Londoño et al., 2005). In the next six months, anxiety, psychosomatic, and depressive syndromes may occur, as well as post-traumatic stress disorders (PTSD) (Pérez et al., 2005). People with PTSD are at greater risk of panic disorders, agoraphobia, obsessive compulsive disorder, phobias, major depressive disorder, bipolar affective disorder, generalised anxiety disorder and substance-related disorder, which may precede, follow or coincide with the start of PTSD (Londoño et al., 2005).

Age, dissociative symptoms and marital status have been identified as risk factors associated with the development of symptoms (Alejo et al., 2007). People who are 50 years old and older

have a higher prevalence of PTSD, suggesting a low level of recovery in contrast to those in their mid-thirties and over who suffer from this traumatic event (Alejo et al., 2007).

Resilience protects us from adversity, though scientific knowledge on the topic is still limited (Pérez et al., 2005). Resilience studies focus chiefly on personal resources that enable people to cope with adverse situations (Jaramillo, Ospina, Cabarcas & Humphreys, 2005). A study applied in Colombia, involving battered women, found a relationship between PTSD and the severity of injuries. Women who had PTSD were subjected, more frequently than those who did not, to severe and moderate injuries coupled with sexual violence (Jaramillo et al., 2005). That same study showed that resilience seems to contribute significantly to reducing the depth of stress, and the number of symptoms reported (Jaramillo et al., 2005). High levels of resilience and spirituality found in that study lead the authors to suggest the possibility of implementing interventions in which personal and social resources that contribute to overcoming the adverse experience could be explored (Jaramillo et al., 2005). The National Mental Health Study showed that 40% of adults between 18 and 44 years old, and 41% of adults aged 45 and over has experienced at least one traumatic event. A low prevalence of PTSD (barely 2 %) (Gomez et al., 2015) proves how, in the Colombian case, there must be protective factors that facilitate adaptation and resolution to traumatic events.

6.3 Reasons for Inclusion of PTSD Items

GMHAT / PC covers a wide range of symptoms and diagnoses that cover the vast majority of situations that can be seen in daily clinical practice. This includes everything from great severity diagnoses such as psychosis to less affecting functional disorders e.g. specific phobias. Likewise, highly frequent diagnoses and of common diagnosis are included in primary care such as depression and anxiety to even more complex diagnoses for general practitioners as are personality problems. This led the author to ponder about the need of including the diagnosis of disorders related to stressors and traumas, PTSD specifically, into the Spanish version.

In the Latin-American context, especially in Colombia, primary care physicians are the gateway to patients with this diagnosis. This is because, to some extent, the disorder is more prevalent in people living in rural areas or in contexts with few psychosocial resources. Precisely, this turns primary care centres into attention providers for the majority of them. Quite clearly, this exposes how doctors should be administered with reliable tools to identify people with these symptoms.

Another reason to consider including the diagnosis of PTSD into GMHAT/PC relates to its prevalence. We felt necessary to include PTSD due to its comparable prevalence (1% to 3%) with other major mental illnesses in some parts of the world. A literature review of the epidemiological studies of PTSD and other mental disorders in Latin-America showed a prevalence ranging from 0.2% in Mexico to 3.3% in Brazil (see Table 13).

Country	Date of research	Subjects	Instrument	Prevalence %	Position between other psychiatric diagnosis
Colombia (Posada et al., 2004)	2003	4544	CIDI	1.8	13/23
Mexico (Medina et al., 2009)	2001-2002	5826	CIDI	0.2	10/19
Brazil (Ribeiro et al., 2013)	2007-2008	3744	CIDI	1.5-3.3*	9-4/12
Chile (Vicente, Kohn, Saldivia, & Rioseco, 2009)	1992-1999	3870	CIDI	2.4	10/21

*compares data of two cities: Sao Paulo and Rio de Janeiro

Table 13. Literature review of prevalence of PTSD in Latin America

Finally, it is important to include PTSD diagnosis as this may a prevailing disorders in certain population groups. For example it prevalence dramatically increases the displaced population. Displaced people in Colombia form the third largest refugee population in the world after Sudan and Angola and Middle East. The Office of the United Nations High Commissioner for Refugees estimated an approximate figure of 2,000,000 displaced people currently in Colombia (Alejo et al., 2007). One of the first symptoms in the displaced population is fear characterised by the expression of feelings of distrust, helplessness and avoidance of everything about his past. This is also related to a difficulty to project themselves into the future, the feeling of self-neglect, and problems to regroup within their new social context (Alejo et al., 2007). Fear and all the emotions attached to it are a reflection of the traumatic events experienced by this population, and they lead to significant changes in behaviour, cognitions and emotions, to the point of producing a great psychological distress, difficulties at developing normal activities, as

well as planning for the future and performing productively within a community (Alejo et al., 2007). The most common traumatic experiences in people forced into displacement are isolation, damage or physical injury, torture, sexual abuse, imprisonment and abduction, forced separation from loved ones, witnessing both deaths and acts of war (Alejo et al. 2007). Prevalence studies in the Colombian displaced population show a higher rates of PTSD than those reported in general population figures: 21% (Alejo et al., 2007), 37% (Londoño et al., 2005), and 97% (Sinisterra, Figueroa, Moreno, Robayo, & Sanguino, 2010). PTSD is more common in people, who having gone thorugh a traumatic event, have to move and then return to the very same place without the necessary security conditions required for survival (Londoño et al., 2005).

Considering that displaced people often receive only primary care services to meet their health needs, health workers working at these healthcare centres must be capable of detecting the most prevalent problems in this population, especially PTSD.

6.4 Selection of Items

ICD-10 includes PTSD within the reactions to severe stress and adjustment disorders. In DSM-IV, it belonged to anxiety disorders, but in DSM-V is classified within the disorders related to traumas and stressors. PTSD diagnostic criteria make clear that the traumatic event constitutes a threat to the physical integrity of the victim or even others close to him/her and generates intense fear, helplessness, or horror (Alarcón, 2002). The clinical triad that defines PTSD includes the phenomena of revival, avoidance and hyper-vigilance.

During the re-experiencing moments, images, thoughts, feelings, noises or odours associated with the trauma may appear, either spontaneously or triggered by stimuli that recall the traumatic event (Carvajal, 2002). These phenomena can occur during wakefulness during sleep or even in dreams as nightmares. These memories are often accompanied by symptoms of physiological reactivity as tachycardia, tachypnea, tremor, changes in temperature, sweating, and even piloerection (Carvajal, 2002). Among the elements that trigger re-living phenomena are television screenings, the cinema or even the newspaper reports (Carvajal, 2002). A noise, a colour, a smell, a written or spoken word by someone, helicopters' or aircrafts' noise, the smell of gasoline, and war films can also act as triggers of invading symptoms (Alarcon, 2002).

An avoidance behaviour is adopted to reduce or eliminate the memory of the traumatic event. They include: no time in the outdoors, change a route or path that used to be previously

taken, avoid watching television or listening to news related to the trauma. The person begins to become socially isolated and avoid conversations about their current trauma or related topics (Carvajal, 2002). Some patients may refuse to perform certain tests or medical procedures as can be the case for those experienced sexual violence (Carvajal, 2002). There are various manifestations of avoidance behaviour of ideas or memories related to the traumatic event, emotional detachment and the impression of a *"shortened future"* in the patient's perspective (Alarcon, 2002). An inability to express emotions *"emotional numbing"* might be present that at times can be mistaken with a lack of interest or motivation that leads to the suspicion of depressive symptoms (Carvajal, 2002). Other dissociative phenomena that may occur as acute reaction to a traumatic event are depersonalization, de-realization and various disorders of perception or temporality (Carvajal, 2002).

The last symptom, hypervigilance, represents irregular sleep, irritability, impaired concentration, emotional numbness and paralysis response to certain stimuli (Alarcon, 2002). Neutral stimuli, such as closing a door or falling objects, become threatening stimuli and the patient reacts with autonomic symptoms that can, potentially, trigger flashbacks (Carvajal, 2002).

In the original version of GMHAT / PC, the last screen of the interview evaluates the presence of stressors with these two questions:

- Have you been in any kind of stress before your problems started?
- For example, anyone close to you died, break-up of a relationship, or any other kind of stress?

Later the interviewer may score the answers under these parameters:

- No stress
- Mild degree of stress
- Moderate degree of stress
- Severe degree of stress

It was decided to include an additional screen to evaluate PTSD in case the person has moderate to severe stress. In the new screen, questions that represent each of the symptomatic groups were included:

What happened after the (stressful event)? Did you suffer from nightmares (about the event?)	Re-experiencing
Have you had moments when you saw the (event) happening again as if it was in front of your eyes?	Re-experiencing
How do you feel about going back to the situation that reminds you of the (event)? Do you avoid it?	Avoidance
Have you become more irritable and jumpy since the (event)?	Hyperarousal

Table 14. Questions included in the additional screen to evaluate PTSD

The interviewer rates as YES or NO the presence of post-traumatic stress in accordance with the assessment of the answers given by the patient.

6.5 Controversies around PTSD Diagnosis

The diagnosis of PTSD has been controversial since its inception in the diagnostic manual. Some consider that PTSD was accepted as a diagnostic entity in 1980 purely to meet the demand for medical care from veterans of the Vietnam War and as leverage to insurance companies reluctant to pay for treatment of an unidentified condition (Alarcon, 2002). Due to its origin, PTSD was limited to trauma from the experience of combat, although the current nosological approach includes other types of events characterised as *extreme* or *catastrophic*: violent attacks of sexual, domestic or criminal nature, kidnappings, acts of terrorism, natural or technological disasters, domestic or industrial accidents, torture, serious medical diagnoses or terminal illnesses, sudden loss of loved ones, witnessing killings, massacres and mutilations, etc. (Alarcon, 2002). Another controversy regarding the diagnosis relates to the pathologising of a phenomenon of social causes. The study on the psychological effects of stress in shelters, and situations of asylum and displacement, and its relationship with the symptoms associated with the diagnosis of PTSD, has resulted in differing viewpoints. Some consider that a psychiatric model is inappropriate for the conceptualization of politically induced violence and repression as this reduces the social, political and historical problems at an individual level (Alejo et al., 2007).

For purposes of this study, both positions were adopted in relation to stress and PTSD. On the one hand, it recognises the existence of situations that are valued as stressful for individuals, and

how they influence the perception of their own mental health and at the same time, to carry out a diagnosis of PTSD based on assessed symptoms recognises the sufferers of violent situations.

6.6 How GMHAT might be improved by the Inclusion of PTSD Items

The GMHAT/PC was developed to allow a comprehensive assessment of the mental state in the primary care setting. Therefore inclusion of clinically relevant diagnoses and problems such as PTSD will be more useful for future users.

As the tool was developed in the UK, perhaps inclusion of 'stress' was considered sufficient for day to day clinical use specially in primary care During the study it became apparent that inclusion of diagnosis PTSD was necessary in Colombian cultural context based on local epidemiological findings of countries or regions where the tool will be used.

This additional contribution made in this study by including a new diagnostic category of PTSD will allow validating GMHAT / PC in other languages and cultures. Also, it gives prospects of adding, replacing or modifying parts of this tool to make them more relevant to their communities.

Chapter 7

Results and Analysis

7.1 Inter-Rater Reliability

In this study, the inter-rater reliability was established by ratings of video-recorded interviews. The psychiatrists' ratings – *Tejada's* and *Dr Ferran's*-, were taken as the gold standard. The prospective GMHAT/PC interviewers, GPs, rated the video-recorded interviews and their ratings were contrasted with that of the psychiatrists - gold standard-, to check the inter-rater reliability.

In the current study, four subjects were recorded using GMHAT/PC interviews in the Spanish language. They were Colombian students at the University of Chester who were given scenarios of various mental disorders to act them out as patients.

Two Spanish-speaking psychiatrists, Tejada and Dr Ferran, with a good deal of clinical experience interviewed these Colombian students who played the role of patients. Tejada has got over ten years of experience in the field of psychiatry. The co-interviewer, Dr Ferran, has worked as a consultant psychiatrist in the NHS for over 20 years.

Two clinicians - *General Practitioners*, viewed these recorded interviews and rated them independently making use of GMHAT/PC. Their ratings were set off against Tejada's and Ferran's.

The inter-rater agreement was examined, on each GMHAT/PC item rating, as well as the concordance with the symptomatic complex and diagnostic outputs. When individual items were examined, both of the GPs correctly and accurately identified symptoms and rated them positively, similar to the psychiatrists' ratings. There were some discrepancies in the severity of ratings, e.g. psychiatrists rated moderate as (2) and the GPs rated severe as (3). Nevertheless, this did not make any difference in the identification of symptom groups and diagnoses. Both of the GPs, from their video interview ratings, correctly identified all four diagnoses i.e. Anxiety, Depression, Psychosis with Depression, and No Mental Illness. The results demonstrated an excellent level of inter-rater agreement on a case-by-case basis. However, due to the limited number of interviews, it was not possible to carry out meaningful statistical analysis on inter-rater agreements.

The following tables compare the diagnoses and scores given by the pair of GPs, for each symptom in each of the four cases:

	Psychiatrists rating	GP 1 rating	GP 2 rating
Anxiety	11	10	11
Concentration	3	2	2
Depression	17	19	15
Psychosis	3	4	3
Obsessions	0	0	1
Phobias	3	7	8
Mania	0	0	2
Hypochondriasis	0	0	0
Disorientation	0	0	0
Memory	0	0	3
Eating disorder	7	10	11
Sleep	3	3	3

Table 15. Case 1: Psychosis and depression ratings

Psychiatrist main diagnosis	Psychosis with depression	Psychiatrist alternative diagnosis	Psychotic disorder, eating disorders, phobia, anxiety, alcohol abuse
GP1 main diagnosis	Psychosis with depression	GP1 alternative diagnosis	Psychotic disorder, eating disorders, phobia, anxiety
GP2 main diagnosis	Psychosis with depression	GP2 alternative diagnosis	Psychotic disorder, eating disorders, phobia, anxiety

Table 16. Case 1: Psychosis and depression diagnosis

	Psychiatrists rating	GP 1 rating	GP 2 rating
Anxiety	11	9	10
Concentration	2	0	1
Depression	2	0	1
Psychosis	0	0	0
Obsessions	1	0	0
Phobias	0	0	0
Mania	0	0	0
Hypochondriasis	0	0	0
Disorientation	1	0	0
Memory	0	0	0
Eating disorder	1	0	0
Sleep	1	0	0

Table 17. Case 2: Anxiety ratings

Psychiatrist main diagnosis	Anxiety	Psychiatrist alternative diagnosis	No mental illness
GP1 main diagnosis	Anxiety	GP1 alternative diagnosis	No mental illness
GP2 main diagnosis	Anxiety	GP2 alternative diagnosis	No mental illness

Table 18. Case 2: Anxiety diagnosis

	Psychiatrists rating	GP 1 rating	GP 2 rating
Anxiety	0	3	0
Concentration	0	0	0
Depression	0	0	0
Psychosis	0	0	0
Obsessions	0	0	0
Phobias	0	0	0
Mania	0	0	0
Hypochondriasis	0	0	0
Disorientation	0	0	0
Memory	0	0	0
Eating disorder	2	3	0
Sleep	0	0	0

Table 19. Case 3: No mental illness ratings

Psychiatrist main diagnosis	No mental illness	Psychiatrist alternative diagnosis	Eating disorder
GP1 main diagnosis	No mental illness	GP1 alternative diagnosis	No mental illness
GP2 main diagnosis	No mental illness	GP2 alternative diagnosis	No mental illness

Table 20. Case 3: No mental illness diagnosis

	Psychiatrists rating	GP 1 rating	GP 2 rating
Anxiety	5	4	4
Concentration	0	0	0
Depression	20	15	20
Psychosis	0	0	0
Obsessions	0	0	0
Phobias	0	0	0
Mania	0	0	0
Hypochondriasis	0	0	0
Disorientation	0	0	0
Memory	0	0	0
Eating disorder	0	0	3
Sleep	3	2	2

Table 21. Case 4: Depression ratings

Psychiatrist main diagnosis	Depression	Psychiatrist alternative diagnosis	Anxiety
GP1 main diagnosis	Depression	GP1 alternative diagnosis	Anxiety
GP2 main diagnosis	Depression	GP2 alternative diagnosis	Anxiety

Table 22. Case 4: Depression diagnosis

7.2. Subjects' Demography and Psychopathology

Two hundred and ninety-nine patients participated in the study, out of that, 162 (54.18%) were males and 137 (45.81%) were females whose ages range from 14 to 78 years old (median 36.03, Standard Deviation 14.16). Though in Colombia, it is legally endorsed that someone who is over 18 years starts his or her adulthood, it is from the age of fourteen, interestingly enough, that people start attending services of general psychiatry, rather than child psychiatry or paediatrics. In the case of those under eighteen years old, an informed consent was filled out by their parents or guardians. While previous studies with GMHAT/PC had been carried out in adult population, in this study to include participant up to the age of 14 was not considered a problem. None of the younger participants presented neurodevelopmental disorders. such as Communication Disorders, Autism Spectrum Disorder, Attention-Deficit / Hyperactivity Disorder, or others even more prevalent in childhood such as elimination disorders or oppositional defiant disorder. There was no significant difference between the gender groups in relation to the age or time taken to complete GMHAT. The interviews were carried out at three different sites; 55 (18.39%) were out-patients, and 244 (81.6%) were in-patients. All of the patients were interviewed independently by seven psychiatrists who were experienced and knowledgeable clinicians (similar to their British counterparts at consultancy level).

The overall mean time taken to administer GMHAT was 12.5 min, whilst the Standard Deviation was 9.98, ranging from 3 to 36 mins. None of the patients declined their consent or expressed rejection to partake in the study. Generally speaking, in Colombia, patients are almost all the time willing to participate in studies. Also, in university hospitals they are aware that research studies are carried out routinely.

7.2.1. Stress and Risk of Self-Harm

Only twenty-four patients (8.03%) reported to have undergone any kind of stress before their problems started. Twenty-two patients (7.36%) had mild risk of self-harm, 8 (2.67%) moderate risk, and 269 (89.97%) presented no risk at all.

7.2.2. Symptoms' Scores

There are 11 symptom groups on which the rating scores are based. They have varying rating scores based on the number of symptom questions associated with that symptom group. The symptom groups and their associated rating scores in this study are showed in Table 23.

Symptoms	Median	Std. Deviation	Minimum	Maximum	Maximum possible
Anxiety	2.04	2.48	0	12	12
Concentration	0.36	0.78	0	3	3
Depression	4.56	5.23	0	27	36
Eating disorder	0.09	0.79	0	12	18
Hypochondria	0.21	0.52	0	3	3
Obsession	0.14	0.47	0	3	3
Phobia	0.67	1.38	0	9	9
Mania	0.90	1.70	0	6	6
Psychosis	1.83	2.28	0	9	9
Disorientation	0.16	0.71	0	7	9
Memory	0.41	1.05	0	6	6

Table 23. Symptom groups and their associated rating scores in this study

7.3. Validity

This study takes account of all diagnoses made by psychiatrists, as well as GMHAT/PC. Psychiatrists made a single diagnosis in 183 (61%) cases, multiple (two) diagnoses in 112 (37%) cases, and multiple (three) diagnoses in other four cases. GMHAT/PC in almost all cases gave additional multiple diagnoses.

Overall, there was an acceptable-to-good level of agreement between the GP's *GMHAT/PC* diagnoses and the psychiatrists' *clinical* diagnoses of any mental illness with Kappa 0.58 95% C.I (0.46, 0.72). There was also a good level of sensitivity (81%) and specificity (92%), with GPs correctly identifying 242 out of the 250 participants diagnosed with a mental illness, and 27 out of 35 of those who did not present with any diagnosis.

The concordance of psychiatrists' ICD-10 based-clinical diagnoses and GMHAT/PC diagnoses is given in Table 24.

Diagnosis	Psychiatrists (n)	GMHAT/PC (n)	Kappa	IC 95%
Any diagnosis	264	250	0.58	(0.46, 0.72)
Psychotic disorder	117	129	0.56	(0.46, 0.66)
Organic disorder	8	8	0.87	(0.69, 1.00)
Alcohol and drug abuse	64	59	0.62	(0.50, 0.74)
Depression	38	68	0.53	(0.41, 0.65)
No mental illness	35	49	0.58	(0.46, 0.72)
Anxiety	10	93	0.14	(0.06, 0.22)
Bipolar disorder (mania)	59	50	0.60	(0.49, 0.73)
Learning disability	50	33	0.40	(0.26, 0.55)
Personality disorder	30	28	0.39	(0.22, 0.56)

Table 24. Level of agreement (Kappa) between psychiatrists' diagnoses and GMHAT/PC diagnoses

Concordance is considered as excellent if kappa was greater than 0.75; acceptable to good with values between 0.4 and 0.74, and poor when it registered less than 0.4.

7.3.1 Anxiety Disorders

The level of agreement for the diagnosis of anxiety disorders was not good: Kappa 0.14, 95% C.I (0.06, 0.22). Sensitivity was 100% with GPs correctly identifying 10 out of the 10 participants diagnosed with anxiety disorders. The specificity was 71% with the GPs correctly determining 206 of the 289 participants not suffering from anxiety disorders.

7.3.2 Depression

The level of agreement for depression was acceptable to good (Kappa 0.53, 95% C.I. 0.41, 0.65). Sensitivity (84%) and specificity (86%) with the GPs correctly recognising 32 out of the

38 participants diagnosed by the psychiatrists as suffering from depression and 225 out of 261 of those without.

7.3.3 Psychosis

The level of agreement for the diagnosis of psychosis was acceptable to good: Kappa 0.56, 95% C.I (0.46, 0.66). Sensitivity was 78% with GPs correctly identifying 91 out of 117 participants diagnosed with psychosis. The specificity was 79% with the interns correctly identifying 144 out of the 182 participants not suffering from psychosis.

7.3.4 Mania

The level of agreement for bipolar affective disorder –*mania*, was acceptable to good (Kappa 0.60, 95% C.I. 0.49, 0.73). Sensitivity (63%) and specificity (95%) with the GPs correctly identifying 37 out of the 59 participants diagnosed by the psychiatrists as suffering from bipolar affective disorder, and 227 out of 240 of those without.

7.3.5 Organic Disorders

The level of agreement for the diagnosis of organic mental disorder was excellent: Kappa 0.87, 95% C.I (0.69, 1.00). Sensitivity was 88% with interns correctly identifying 7 out of 8 participants diagnosed with organic mental disorders. The specificity was 100% with the GPs correctly identifying 290 out of the 291 participants not suffering from organic mental disorder.

The sensitivity, specificity, positive predicted value, and negative predicted value of each diagnosis are given in Table 25.

Diagnosis	Sensitivity	Specificity	PPV	NPV
Psychotic disorder	78%	79%	71%	85%
Organic disorder	88%	100%	88%	100%
Alcohol and drug abuse	67%	93%	73%	91%
Depression	84%	86%	47%	97%
No mental illness	92%	77%	97%	45%

Anxiety	100%	71%	11%	100%
Bipolar disorder (mania)	63%	95%	74%	91%
Learning disability	40%	95%	61%	89%
Personality disorder	43%	94%	46%	94%

Table 25. Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of each diagnosis.

7.4 GMHAT/PC Diagnosis and GPs' Clinical Judgment (Diagnosis), and Psychiatrists' Diagnosis

The tool allows GPs to make an independent clinical judgment, or diagnosis as the reader prefers to name it, before he or she can find out computer-assisted GMHAT/PC diagnoses. This allowed comparing the level of agreement among the GP's diagnosis with the psychiatrists' diagnosis and the GMHAT diagnosis.

GP diagnosis	Psychiatrists diagnosis (Kappa)	GMHAT diagnosis (Kappa)
No mental illness	0.46	0.41
Psychotic disorder	0.53	0.74
Organic disorder	0.59	0.48
Alcohol and drug abuse	0.69	0.78
Depression	0.55	0.62
Anxiety	0.47	0.25
Bipolar disorder (mania)	0.52	0.71
Learning disability	0.49	0.60
Personality disorder	0.50	0.50

Table 26. Level of agreement among the Psychiatrists diagnosis, the GMHAT diagnosis and the GP diagnosis

7.5 Reliability for Internal Consistency

In order to assess validity and, in particular, reliability, Cronbach's Alpha was calculated. Reliability was considered as excellent solely if alpha was greater than 0.9, good with values

between 0.7 and 0.9, acceptable with values between 0.6 and 0.7, poor with values between 0.5 and 0.6, and unacceptable when it was less than 0.5. Table 13 shows Cronbach's Alpha for every subscale (Symptom). The internal consistency for depression, mania and disorientation was good with alpha values greater than 0.7. The lower registered value was for memory with poor internal consistency.

Symptoms	Cronbach's alpha
Anxiety	0.68
Depression	0.70
Eating disorder	0.68
Mania	0.73
Psychosis	0.67
Disorientation	0.79
Memory	0.54

Table 27. Reliability for internal consistency (Cronbach's Alpha for every subscale).

In addition to that, the anxiety score showed a significant correlation with concentration, depression, hypochondria, obsession, and phobia scores. (Range 0.17–0.32, P < .01). The depression score resulted in a significant correlation with anxiety, concentration, hypochondria and phobia scores. (Range 0.15–0.29, P < .01). Similarly, the psychosis score demonstrated a significant positive correlation with eating disorder scores (0.12, P < .01), and a significant negative correlation with depression (-.11, P < .01) and hypochondria scores (-.12, P < .01). The mania score exposed a significant negative correlation with the depression score (-.12, P < .01), and the memory score (-.13, P < .01), nonetheless (see Table 28).

	Anxiety score	Concentration Score	Depression Score	Eating Disorder Score	Hypochondria Score	Obsession Score	Phobia Score	Mania Score	Psychosis Score	Disorientation Score	Memory Score
Anxiety Score	1	**.214****	**.263****	.024	**.321****	**.178****	**.291****	.029	-.104	-.108	-.063
Concentration Score	**.214****	1	**.158****	.012	**.223****	.081	.028	-.089	-.032	-.002	**.160****
Depression Score	**.263****	**.158****	1	.061	**.152****	.016	**.294****	**-.128***	**-.119***	-.027	-.038
Eating Disorder Score	.024	.012	.061	1	.043	**.350****	**.115***	.055	**.126***	-.020	-.042

Hypochondria Score	**.321****	**.223****	**.152****	.043	1	**.247****	**.144***	-.056	**-.124***	.025	.095
Obsession Score	**.178****	.081	.016	**.350****	**.247****	1	**.205****	-.066	-.021	-.047	-.037
Phobia Score	**.291****	.028	**.294****	**.115***	**.144***	**.205****	1	-.054	-.014	-.018	-.059
Mania Score	.029	-.089	**-.128***	.055	-.056	-.066	-.054	1	.038	-.089	**-.139***
Psychosis Score	-.104	-.032	**-.119***	**.126***	**-.124***	-.021	-.014	.038	1	.064	-.084
Disorientation Score	-.108	-.002	-.027	-.020	.025	-.047	-.018	-.089	.064	1	**.227****
Memory Score	-.063	**.160****	-.038	-.042	.095	-.037	-.059	**-.139***	-.084	**.227****	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 28. Correlations between GMHAT/PC different symptoms scores (Significant correlation for each score is showed in bold type)

7.6 Cases with Disagreement

7.6.1 No Mental Illness

In twenty-two cases, where GMHAT/PC found not a single mental illness, psychiatrists gave one or the other diagnosis of mental illness. The psychiatrists' diagnoses distribution of these 22 cases is given below:

Psychosis	6
Bipolar disorder (mania)	4
Depression	4
Learning disability	4
Alcohol and drug abuse	3
Other	1

7.6.2 Anxiety Disorders

Fifteen cases diagnosed by GMHAT/PC as anxiety as the main diagnosis, had different diagnoses given by psychiatrists. Overall, 83 cases had a diagnosis of anxiety, and out of those, 68 had anxiety as an additional diagnosis. The distribution of psychiatrists' diagnoses in the remaining 15 GMHAT/PC of primary diagnoses of anxiety disorder is given below:

Alcohol and drug abuse	5
Learning disability	1
No mental illness	3
Other	1
Personality	2
Psychosis	3

7.6.3 Depression

Thirty-two cases diagnosed as depression by GMHAT/PC as the main diagnosis had different diagnoses by psychiatrists. In summary, 36 cases had a GMHAT/PC diagnosis of depression, and out of those, four cases had depression as an additional diagnosis. The distribution of the psychiatrists' diagnosis in the 32 GMHAT/PC main depression diagnoses is given below:

Alcohol and drug abuse	6
Anxiety	1
Bipolar (mania)	4
Learning disability	3
No mental illness	1
Other	3
Personality disorder	7
Psychosis	7

7.6.4 Psychosis

Thirty-five cases with GMHAT/PC, as the main diagnosis of psychosis, had different diagnoses by psychiatrists. In total, 38 cases had a GMHAT/PC diagnosis of psychosis, and three cases had psychosis as an additional diagnosis. The distribution of the psychiatrists' diagnosis in the 35 GMHAT psychosis diagnoses is provided below:

Alcohol and drug abuse	13
Anxiety	3
Bipolar (mania)	5
Depression	3
Learning disability	3
Other	4
Personality disorder	4

7.6.5 Mania

There were two cases of GMHAT/PC with the main diagnosis resulting in mania. They had a couple of diagnoses by psychiatrists: one had a psychiatrist diagnosis of mixed dementia, whereas the other one had diagnosed a learning disability with associated psychosis. Overall, 13 cases had GMHAT/PC diagnosis of mania, and out of those, 11 had mania as an additional diagnosis.

7.6.6 Organic Disorders

Only one patient, who had a diagnosis of organic disorder by GMHAT/PC, obtained a psychiatrist's diagnosis of mental and behavioural disorder associated to a learning disability.

7.7 Disagreement between GPs' Clinical Judgment (Diagnosis) and Psychiatrists' Diagnosis

7.7.1 No Mental Illness

Thirteen cases diagnosed with no mental illness at all by the GPs, had discrepancies with the psychiatrists' clinical diagnoses. The distribution of the psychiatrists' diagnoses of these 13 cases is indicated below:

Alcohol and drug abuse	4
Psychosis	4
Learning disability	3
Depression	1
Other	1

7.7.2 Anxiety Disorders

Fourteen cases showed differences between the GPs' and the psychiatrists' clinical diagnoses. The distribution of the psychiatrist' diagnoses of these 14 cases of anxiety disorders by the GPs, is made hereunder:

Bipolar disorder (mania)	3
Depression	3
Other	3
Psychosis	2
Alcohol and drug abuse	1
No mental illness	1
Personality disorder	1

7.7.3 Depression

Thirty cases showed differences in the GPs' and the psychiatrists' clinical diagnoses. The distribution of psychiatrist' diagnoses of these 30 cases of depression by GPs is given below:

Bipolar disorder (mania)	9
Psychosis	6
Personality disorder	4
No mental illness	3
Alcohol and drug abuse	3
Other	3
Learning disability	2

7.7.4 Psychosis

Twenty-four cases showed differences in the GPs', and the psychiatrists' clinical diagnoses. The configuration of the psychiatrists' diagnoses of these 24 cases of psychosis by GPs is rendered below:

Alcohol and drug abuse	7
Bipolar disorder (mania)	6
Depression	3
Other	3
Personality disorder	2
Learning disability	2
No mental illness	1

7.7.5 Mania

Sixteen cases showed differences in the GP's and the psychiatrists' clinical diagnoses. A the distribution of the psychiatrist' diagnosis of these 16 cases of mania by GP is given below:

Psychosis	7
No mental illness	5
Alcohol and drug abuse	2
Organic	1
Personality disorder	1

7.7.6 Organic Disorders

Eight cases showed discrepancies between the GPs' and the psychiatrists' clinical diagnoses. One case of dementia secondary to alcohol abuse diagnosed by a psychiatrist was, however, diagnosed as a behavioural diagnosis secondary to alcohol abuse by the GP. Furthermore, seven patients that were diagnosed as organic by the GP, obtained the psychiatrists' diagnoses with no mental illnesses (1), bipolarity (1), depression (2), alcohol and drug abuse (2) nor psychosis (1).

7.8. Feasibility

7.8.1 GP's Feedback

Overall the GPs' experience was positive, as evident by this particular and detailed statement given below:

The experience using the Global Mental Health Assessment Tool - Primary Care (GMHAT/ PC) was very rewarding in the sense of allowing me to know the patients a little better in an emotional and personal way. Those aspects usually are under looked in clinical practice because the priority is the somatic/medical condition. Something interesting happened when questioning patients and asked them: How have you been recently? Do you have any problems? In the vast majority of times they responded according to medical pathologies and not according to mood, only when I readdress and explaining the question, the patient could understand and respond.

Sometimes clinical judgment makes us think that certain patients because of their clinical condition can or not have some mental disorder. This is the case of two patients of General Surgery: one was hospitalised for more than 4 months, receiving parenteral nutrition, having multiple abdominal surgeries for an entercutaneous fistula. You would think by his situation that this patient would have reasons to be sad or depressed, but when I apply the tool he not scored

for any disorder. The other patient had small vessel disease, his prognosis was bad, the surgical team were going to amputate one of his lower limbs; this patient died because a diaphragmatic hernia that no one had discovered, and no one had noticed that this patient had depression and was through the implementation of the interview GMHAT / PC that the mood disorder was detected.

Although these clinical prejudices may be a bias to establish a diagnosis of a particular patient by underlying disease or clinical condition, in certain circumstances allow us to get an idea of the condition of the patient. On occasions when I applied the interview I thought the patient could present criteria for a particular disorder but at the end of the questionnaire the patient did not score for any diagnosis. On the other hand, in some patients I thought that his mental examination would be normal, and then the GMHAT / PC punctuated for some disorder, such as anxiety.

This structured interview provides to the GPs the ability to detect in an easy and simple way any alteration in mental health. This could allow the early detection of possible mental diseases and guarantee for patients a timely diagnosis and effective treatment by the specialist. Another important aspect during the implementation of this tool was the prejudiced attitude of the respondents when they were informed that I was going to ask about their mental health. Some rejected the interview but once I explained the questions they acceded to collaborate. At the end of the interview they changed their minds when they realised that the questions were of everyday life and not questions that make them feel uncomfortable or judgemental on their private life.

In conclusion, the results show that the Global Mental Health Assessment Tool - Primary Care is an important tool in order to help GPs to detect mental alterations. That allows the patient to become familiar with the mental health interview facilitating change misconceptions about mental disorders or even attend a consultation with a psychiatrist.

7.9 Results of the Study Using GMHAT/PC-Spanish in Medically-Ill Patients

A total of 455 participants were interviewed using GMHAT/PC; 282 (61.98 %) were women and 173 (38.02%) were men.

7.9.1 Internal Medicine

The demographic data of the patients seen in the internal-medicine ward is provided in the following table:

Gender	Males	Females
N (%)	82 (54.67%)	68 (45.33%)
Age mean	63.06	63.80
Range	18-88 years	19-94 years
Diagnosis of mental illness	4 (4.87%)	8 (11.76%)

Table 29. Demographic data of the patients seen in the internal-medicine ward

Out of 150 interviewed patients, 12 of them (8%) presented a mental illness in accordance with the GMHAT/PC interview. The distribution of the diagnoses is as follows:

Organic 3

Anxiety 3

Depression 3

Drug Abuse 2

Hypochondriasis 1

It is worth noting that out of the three patients with an organic diagnosis, two were women and one man. Though, all of the interviewees were over their seventies, it was determined that the patients with anxiety were all women. Differently, amongst the patients with depression, the results pointed towards two women and just one man. Moreover, the pair of patients with drug misuse were men, as for hypochondriasis, the outcome remained at a single digit with only a 20-year-old woman.

7.9.2 Surgery

One hundred and fifty patients from surgical wards were interviewed using GMHAT/PC. The demographic data is given in the following table:

Gender	Males	Females
N (%)	91 (60.67%)	59 (39.33%)
Age mean	40.98	51.64
Range	18-84 years	19-89 years
Diagnosis of mental illness	4 (4.39%)	6 (10.16%)

Table 30. Demographic data of the patients seen in the surgery

It was also found that 10 out of 150 patients (7%) had a mental illness. The distribution of the psychiatric diagnosis is summarised hereunder:

Organic	2
Anxiety	1
Depression	4
Drug Abuse	2
OCD	1

Both cases of organic diagnosis were women over the age of 82. Meanwhile, three of the four patients with depression happened to be women. Also, the couple of patients with drug abuse were men. Last but not the least, one woman presented anxiety disorder, and one more man was determined with Obsessive Compulsive Disorder.

7.9.3 Obstetrics and Gynaecology

One hundred and fifty-five patients from Obstetrics and Gynaecology were interviewed making use of GMHAT/PC. Their ages ranged from the mid-teens at 14 to the mid-seventies at 74 with a mean age of 26. As there were few women age 14-17, however none of these women presented with a mental illness.

7.9.4 Mental Illness and Medical Diagnosis

The following table provides the psychiatric diagnosis in patients with their medical or surgical conditions for which they needed in-patient care:

Diagnosis	(n)	Associated diagnosis
Depression	7	Total gastrectomy, melanoma, leg ulcer, peritoneal carcinomatosis, myocardial infarction, rheumatoid arthritis, cervical cancer
Organic Mental Disorder	5	Bowel obstruction, diverticulitis, stroke, prostate adenocarcinoma, urinary tract infection
Anxiety	4	Rectal tumour, ovarian cancer, cervix cancer, epigastric pain
Substance abuse	4	Foreign body, thoracotomy, 26% burns, cocaine pneumopathy
OCD	1	Esophageal Adenocarcinoma
Hypochondriasis	1	Thoracic pain

Table 31. Psychiatric diagnosis in patients with their medical or surgical conditions for which they needed in-patient care

None of the detected cases by GMHAT/PC was previously identified by their respective services as suffering from mental illness.

7.10 Summary

In summary, in the main study, two hundred and ninety-nine patients participated in the study. The mean duration of an interview was 12.5 minutes. There was an acceptable-to-good level of agreement between the GP's (GMHAT/PC) diagnoses and the psychiatrists' (clinical) diagnoses of any mental illness, Kappa 0.58 95% C.I (0.46, 0.72). There is also a good level of sensitivity (81%) and specificity (92%) with GPs correctly identifying 242 out of the 250 participants diagnosed with a mental illness, and 27 out of 35 of those who do not present any.

In the additional study of using GMHAT/PC in a medical setting, out of 455 medically-ill patients, 4.8% had a mental illness identified by the GMHAT/PC interview. Anxiety, depression and organic disorders were the most frequently identified mental disorders in internal medicine and surgery. Cancer suffers had a significantly higher prevalence of comorbid mental illnesses.

Chapter 8

Discussion

8.1 Reliability and Validity of GMHAT/PC Spanish Version

8.1.1 Reliability

Reliability is the extent to which repeated measurements of a stable phenomenon, by different people and instruments at different times and places, get similar results (Fletcher, Fletcher, & Fletcher, 2014). Reproducibility and precision are an additional terms used to address this property. The reliability of symptoms can be established by showing that they are similarly described or rated by different observers under different conditions (Fletcher et al., 2014).

Of all the published validation studies on diagnosis, a large number of them do not report what they did or the methods applied to check reliability of their assessments. Most validation studies use two different ways to establish reliability. For example, some of them opt for running repeated measures (retest) some days after the initial administration in a subsample of patients (Camozzato, Godinho, Kochhann, Massochini, & Chaves, 2015; Garcia-Campayo et al., 2005) .

Whereas other studies opt for assessing reliability by applying the same measures on the same patients (inter-rater) by different assessors (Henrique-Araújo et al., 2014; Herrero et al., 2003; Lobo, Pérez-Echeverría, & Artal, 1986). To some extent, it is straightforward to test inter-rater reliability by using video recorded assessments, and subsequently get them rated by researchers or professionals after they have received sufficient training on how to use such instruments. In this study, video recordings of semi-structured clinical interviews were used to test the reliability of the GPs' interviews. The video recorded interviews of patients (actors) had clinical symptoms of different mental disorders. This study is in line with the views of researchers who have endorsed video methods as a way to establish reliability in their studies (de Beurs, Tielen, & Wollmann, 2014; Henrique-Araújo et al., 2014; Hiranyatheb, Saipanish, & Lotrakul, 2014). Additionally, in this study, inter-rater reliability coefficient (Kappa) was estimated between trainees and the expert on each item of the instrument as reported in other reliability studies (Daradkeh, Ghubash, el-Rufaie, & Abou-Saleh, 1999).

Reviewing and adapting the reliability process of the original study of GMHAT/PC development (Sharma et al., 2004) was considered essential process of this study . Furthermore,

in this study the patients were interviewed by psychiatrists using GMHAT/PC and they also rated simultaneously by a general practitioner registrar in order to check inter-rater reliability. The assessment on inter-rater reliability was performed by the Cohen's kappa coefficient on 56 patients. This symptom-based inter-rater reliability exercise rendered scores that ranged from 0.49 to 1 (Sharma et al., 2004).

As GMHAT/PC presented a good reliability based on the original study, it became the focus of this study to ensure that GPs approach and use GMHAT/PC in a reliable way. Hence, GPs were trained to use the Spanish version of GMHAT/PC. Following their training, they were asked to rate all video recorded interviews.

When the scores provided by each GP were contrasted with that of the psychiatrists, it became apparent that the scores similar and close to one another. In each of the four interviews, there was almost a complete agreement in the absence of symptoms as GPs similar to psychiatrists marked it with a zero most of the times.

With regards to the first video, it contained a depression with psychosis case. The other possible diagnoses suggested by the GMHAT were: psychotic disorder, eating disorders, phobia, anxiety, and alcohol abuse. The main diagnosis showed an exact match from the pair of GPs. As for the score of each symptom, the only difference was spotted in phobias as the psychiatrists rated it as mild, whereas the GPs valued it as moderate. Though, this did not have a meaningful impact on the final outcome.

The second video, a case of anxiety had no other possible diagnosis based on the interview. The GPs fully agreed with the diagnosis given by the psychiatrist, and the scoring from to symptom showed hardly any discrepancies.

The third video represented a case without any mental illness whatsoever. As far as symptom scores are concerned, the only difference was observed in a GP who valued anxiety as mild whilst, the psychiatrist considered absence of anxiety. Both GPs however agreed on the absence of diagnosis.

The last video portrayed a patient diagnosed with depression. This also presented anxiety as a possible additional diagnosis. The only difference, on a symptom score level, in this video interview was that a GP who rated eating problems as mild whereas the psychiatrist's rated that negative. Overall, the two GPs agreed with the main diagnosis based on psychiatrist's ratings.

To conclude, the agreement of ratings based on Spanish version of GMHAT/PC interviews administered by both the psychiatrists and by the GPs was very good. Even though, some variations encountered in the estimation of the severity of symptoms, their explanation can be based upon the variability of clinical experience of two sets of clinicians. General Practitioners tend to over rate symptoms.

8.1.2 Validity

Validity is the degree to which the data measures what they were intended to measure—that is, the degree to which the results of a measurement correspond to the true state of the phenomenon being measured. Another word for validity is accuracy (Fletcher et al., 2014). For clinical observations it is relatively easy to establish validity. The observed measurement is compared with some accepted standards (Fletcher et al., 2014).

It is worth noting there are two different ways to establish validity, and they tend to make use of the established assessment tools in the research field as a gold- standard to examine construct validity (García-Nieto, Blasco-Fontecilla, Paz Yepes, & Baca-García, 2013; Lobo et al., 2002; Vargas, Villamil, Rodríguez, Pérez, & Cortés, 2011). Other studies evaluate the internal consistency and validity of scales using the diagnosis of a psychiatrist as defined by DSM-IV or ICD criteria as a reference, and then examine the psychometric properties of the new scales (Constaín et al., 2014; Lobo et al., 1986; Ruiz-Grosso et al., 2012). These studies found that the scales under scrutiny have good internal consistency and external validity with favourable sensitivity and specificity, as well as similar or better statistics than the original ones.

The original GMHAT/PC development study (Sharma et al., 2004) showed a good agreement between GMHAT/PC and the psychiatrists' ICD-10 based diagnosis except for cases of depression, where roughly 27% of the cases with a clinical diagnosis of depression had computer diagnoses of other disorders, mainly anxiety disorders. All subsequent GMHAT validation studies compared GMHAT/PC diagnosis against the psychiatrists' diagnosis as gold standard (Sharma, Krishna, Lepping, Bowen, 2013; Sharma, Sawa, Copeland, Abou-Saleh, Lane , 2013; Sharma, Krishna, et al., 2010). They found a good level of agreement between GMHAT/PC diagnosis and the psychiatrists' (clinical) diagnosis.

8.1.2.1 Agreement with Psychiatrists' Diagnoses

The findings of this study show that the GMHAT/PC diagnoses have sound agreement with psychiatrists' diagnoses for all mental disorders. The tool has better agreements for the diagnosis of psychosis, depression, bipolar (mania), and alcohol and drug abuse. It can be added that the achieved agreement was excellent for the diagnosis of organic disorders. The following table compares the levels of agreement found in this study and in other previous GMHAT / PC validations.

Agreement (Kappa)	Spanish validation	(Sharma et al., 2008)	Old age .(Sharma, Krishna, et al., 2010)	Hindi version. (Sharma, Jagawat, et al., 2010)	Arabic version. (Sharma, Sawa, Copeland, Abou-Saleh, Lane, 2013)
All mental disorders	0.58	0.76	0.72	0.96	0.91
Depression	0.53	0.78	0.84	0.85	0.75
Anxiety	0.14	0.65	ND	0.90	0.75
Psychosis	0.56	0.92	ND	ND	0.76
Organic	0.87	ND	0.67	ND	ND

Table 32. Levels of agreement (Kappa) found in this study and in other previous GMHAT / PC validations.

Though the Kappa values were good for most of the diagnoses in the Spanish version, their values are much lower than those reported in other studies performed with the validated version. This led Tejada to compare the methodological differences that could explain these results. Unlike previous studies, this one included patients with more than one diagnosis, representing 39% of the overall cases. Additionally, previous studies used cases that met all the criteria to accomplish well-defined diagnoses according to GMHAT/PC. In this study, the way sample data was collected, it was found that there were patients with unspecified and/or undetermined diagnoses in partial remission with secondary disorders to medical conditions or a certain substance use, and diagnoses that do not appear in the GMHAT/PC i.e. borderline IQ, adjustment reaction, factitious disorder, etc.). However, this is not a limitation; as patients in this

study represent all types of situations that doctors and psychiatrists have to face in their routine duties, and this study therefore allowed to shows how GMHAT / PC behaved in a real world situation.

Anxiety disorders:

In this section a further explanation is required concerning the diagnosis of anxiety diagnosis which showed very low (0.14) kappa values. It is important to clarify that Kappa values are affected by the prevalence (number of cases) of the diagnosis (Viera & Garrett, 2005). When the prevalence of a diagnosis is low, the number of true negatives is high. Therefore the effect of wrongly diagnosing of anxiety in few patients get unduly magnified. As a result, the random coincidence will be higher too. Kappa however eliminates the influence of randomness as result in these circumstances low values of that coefficient will be obtained (Hervada et al., 2014). That could explain the low agreement for anxiety disorders as those are the diagnoses with the lowest number of cases *–10 overall*. The low numbers are somewhat unusual in this sample as anxiety disorders are among the most frequent ones with prevalence in the general population between 4% and 31% (Kessler et al., 2007). The fact that the vast majority of interviewed patients were hospitalized could influence the underrepresentation of cases of anxiety. Other reasons, that may be associated with the low Kappa value, are explained in the sections 8.1.2.3.3 and 8.1.2.3.4 (Reasons of disagreement in diagnosis)

8.1.2.2 Sensitivity and Specificity and their Relevance

The results show that GMHAT/PC has the ability to correctly diagnose patients with any mental disorder particularly psychosis, depression and anxiety. On the contrary, the sensibility for the diagnosis of mania, learning disorders, personality problems and alcohol and drug disorders is not that effective. That does not necessarily mean that there is essentially a problem with the GMHAT/PC, as it is well-known in clinical practice that learning disabilities, personality disorders and substance abuse are difficult diagnoses that require multi-source information, and more than one assessment. In a real world situation, the psychiatrist has the liberty to make further assessments and tests to be reassured of the diagnosis. For this reason, it is not expected that those diagnoses are easily made at a primary care level at a single assessment.

GMHAT/PC, based on the findings of this study, has a good ability to diagnose correctly. A high level of specificity is reassuring because GMHAT/PC is primarily developed as a diagnostic tool, rather than a screening instrument. Mental Health Gap Action Plan, developed by WHO, recommends the development of simplified diagnostic and treatment tools (WHO, 2008).

Caution should be maintained at all times when using screening instruments in primary care. Scales measuring symptomatology tend to have low specificity leading to pick up a larger number of false positives. Therefore, screening instruments should primarily be used to alert GPs that a further clinical evaluation is necessary in these cases as opposed to accepting them as diagnostic measures. If GPs are provided with easily administrable diagnostic tools, the evidence will suggest that with appropriate training and supervision they can deliver a good quality of care for mentally-ill individuals (WHO, 2008).

The correlation of GMHAT/PC's diagnosis with the psychiatrists' diagnosis is high for any mental illness, especially psychosis, organic disorders and alcohol and drug abuse. The negative predicted value was also very high for all diagnosis, affirming that GMHAT/PC is a robust diagnosis tool.

The following table compares the results of sensitivity and specificity from the Spanish version of GMHAT / PC with other validation studies:

	Sensitivity (Spanish version)	Sensitivity (others versions)	Specificity (Spanish version)	Specificity (others versions)
All mental disorders	81%	77% - 84%	92%	92% - 96%
Depression	84%	73% - 91%	86%	94% – 98%
Anxiety	100%	72% - 85%	71%	92% - 100%
Psychosis	78%	71% - 86%	79%	97% - 100%
Organic	88%	60%	100%	95%

Table 33. Results of sensitivity and specificity from the Spanish version of GMHAT / PC with other validation studies

As can be seen, the results of this study are similar to those found in other studies validating the GMHAT / PC.

The diagnostic odds ratio (DOR) was calculated using the following formula (Ali, Ryan, & De Silva, 2016):

$$DOR = \frac{Sensitivity/(100 - Sensitivity)}{(100 - Specificity)/Specificity}$$

DOR is a measure of screening tool effectiveness. It is defined as the ratio of the odds of a true positive screening positive relative to the odds of a true negative screening positive. Possible results range from 0 to infinity, with higher ratios indicating a better performing test. DOR increases very steeply as sensitivity and specificity tend towards 100%, so the following cut-offs were applied to rate screening tool validity: DOR≥50 for very strong validity, 50>DOR≥20 for strong, 20>DOR≥10 for fair and 10>DOR for weak (Ali et al., 2016). The DOR for GMHAT/PC Spanish version was 47.33 meaning strong validity.

8.1.2.3 Reasons of Disagreement in Diagnosis

The disagreements between the GMHAT/PC's diagnosis and the psychiatrists' diagnosis could possibly be attributed to the patient's state at the time of the interview, the GP's flawed ratings, the psychiatrist's misdiagnosis and/or GMHAT/PC's problems with its diagnosis.

8.1.2.3.1 Patient

GMHAT/PC identified fewer patients with alcohol and drug problems than the psychiatrists. All patients were asked about substance use as a part of GMHAT/PC interview. A plausible reason for poor identification of alcohol and drug problems is that patients may have denied these issues at the interview. It is also possible that some of these patients were not actively misusing alcohol or drugs at the time of interview, since the psychiatrist made such a diagnosis based on recent or past misuse.

8.1.2.3.2 General Practitioner (GP)

It is worth noting that the GPs using GMHAT/PC identified more cases of psychosis than the psychiatrists did. Some of these patients had behavioural disorders associated with drug abuse. GPs may have found it challenging to differentiate between patients reporting quasi-psychotic symptoms associated with dysfunctional and impulsive attitudes linked to their drug misuse and

psychosis. The same might have happened with patients having borderline personality, antisocial behaviour and impulse control disorders. GPs also diagnosed psychosis in some patients who largely had manic symptoms instead.

Moreover, GPs identified patients with the psychiatrist's diagnosis of psychosis as cases of depression. This may happen in patients with residual symptoms whose clinical picture may have been similar to that of a depressive mood episode. Also, GPs failed to diagnose some cases of bipolar (mania) that were identified by psychiatrists. Some of them were identified as not having mental illnesses by the GPs. This could be explained by the fact that mild symptoms of mania are overlooked by the GP as opposed to by psychiatrist.

GPs also identified fewer patients with learning disabilities and personality problems. This is arguably because personality disorders are difficult to recognise and diagnose in a short clinical interview by a primary care professional. The other arguments of poor recognition of personality issues are that they are not as clearly defined as other mental illnesses and the GPs have limited expertise in this matter. Similarly, it is not always easy to identify learning disabilities, especially of mild to moderate degree, by GPs unless they have an informant that provides a great deal of the patient's developmental details. Additionally, GPs have no resources to apply a neuropsychological battery.

In conclusion, these findings suggest that a strong focus should be given on improving GPs' skills for diagnosing psychosis, mania, personality disorders, and learning disorders. This can be achieved by organizing mental health training programmes for primary care professionals giving an extra emphasis on these diagnoses.

8.1.2.3.3 Psychiatrist

Some patients with psychiatrists' diagnosis of depression were identified by the GMHAT/PC as cases of anxiety. That is not really a big issue, though. In primary care the most common co-occurrence is depression and anxiety (Sartorius, Ustün, Lecrubier, & Wittchen, 1996). The results of this study also demonstrate that the depression score had a significant correlation with anxiety scores. It is therefore possible that most of the patients with a depression diagnosis administered by the psychiatrist, indeed, had a mixed anxiety-depression disorder. In fact, out of the 68 cases of depression detected by GMHAT / PC, 15 of them (22%) were classified with the additional diagnosis of anxiety. This is another reason that may explain the low levels of Kappa

obtained with the diagnosis of anxiety. Certainly, the level of agreement would have been much higher if the psychiatrists had been able to detect these mixed disorders.

Another condition that GMHAT/PC identified was depression in patients with a psychiatrist's diagnosis of personality disorder, borderline to be more precise. It is well reported that 20% to 50% of in-patients and 50% to 85% of out-patients with a current major depressive disorder have an associated personality disorder (Corruble, Ginestet, & Guelfi, 1996). Cluster B personality disorders, in particular borderline (10–30%), seem to be overrepresented (Corruble et al., 1996). The coexistence of a personality disorder and a major depression is frequent, and it is likely that many patients in this study had both diagnoses.

Furthermore, GMHAT/PC identified depression in a number of patients with a psychiatrists' diagnosis of alcohol abuse. Depressive symptoms are common in patients with alcohol abuse of all ages and are much more common than diagnosable depressive disorders (Khalid, Kunwar, Rajbhandari, Sharma, & Regmi, 2000). The prevalence of major depression in alcohol dependence is 17% and with little correlation between severity of alcohol dependence and depression (Khalid et al., 2000).

8.1.2.3.4 Tool (GMHAT/PC)

One noticeable finding is that GMHAT/PC programme possibly over-diagnosed anxiety disorders. Even in cases where both psychiatrists and GPs agreed about other diagnosis, GMHAT/PC reported anxiety as the main diagnosis. Most of these cases had the additional diagnosis of GMHAT/PC appropriately matching with the psychiatrist's diagnosis. One possibility that comes up is that the GP interviewers over-rated anxiety symptoms. At the same time, it may also require a close examination of the diagnostic algorithm for Anxiety disorders of the GMHAT/PC. Equally, there remains a possibility of psychiatrists missing cases of anxiety as they might forget to ask questions about anxiety when assessing their patients.

Lastly, GMHAT/PC also had difficulties in identifying psychosis when the patients did not present positive symptoms of psychosis (e.g. delusions and hallucinations). That eventuality occurred in patients with a diagnosis of schizophrenia with undifferentiated and residual subtypes. It is worth stating that GMHAT/PC intended to diagnose mental illness accurately in primary care settings in a short span of time, therefore the developers focussed mainly on detection of whole range of common mental illness. Any doubtful or unclear cases can always be referred to specialist for further assessment and diagnosis.

8.2 Validation of Spanish Diagnostic Tools

Most international studies have indicated that mental disorders exist across all cultures and nations while recognizing that cultural differences exist in symptom presentation and prevalence estimates (Ballenger et al., 2001). Others have suggested the possibility that assessment tools such as CIDI and other screening instruments and methods do not capture fully accurate detection and nature of the disorders studied because of language or cultural differences in the conceptualization of various symptoms (Asnaani, Richey, Dimaite, Hinton, & Hofmann, 2010). Differences in meaning of worded prompts or biases towards diagnosis of other psychopathology resulted in a reduced validity and reliability of measures that had been previously validated in English samples and used in other cultures (Asnaani et al., 2010). This highlights the importance of examining mental health assessment tools in Spanish that have been validated so far. It is important to point out that Spanish is the lenguage from many different countries and regions that also has regional differences in dialect from one to the other place. These differences in language can influence assessment results when the test items (questions) include words that vary in meaning by country or region (Benuto, 2013). Due to these reasons, for this study GMHAT/PC was translated having several Spanish speaking professionals from different countries (Spain and Colombia).

Spanish is one of the most widely spoken languages in the world; it is the official language of 21 countries and the second language in the United States. (Cervantes, 2015). (Figure 8).

Figure 8. Map of Spanish speaking countries.

Spanish is the majority language in 21 states and several dependent territories, totaling around 440 million people. In these countries and territories, Spanish is the main or only language of communication of the vast majority of the population; official documents are written chiefly or solely in that language; and it is taught in schools and utilized as the primary medium of instruction as part of the official curriculum.

Spanish has been spoken in the United States for several centuries, particularly in the Southwest and Florida. Spanish is the most studied foreign language in United States schools and is spoken as a native tongue by 41 million people, plus an additional 11 million fluent second-language speakers. It is also de facto official in the U.S. state of New Mexico along with English and is increasingly used alongside English nationwide in business and politics. With over 50 million native speakers and second language speakers, the United States now has the second largest Spanish-speaking population in the world after Mexico

Millions of people are likely to be benefitted if to the diagnostic tools are made available in the Spanish language. In addition, more and more Spanish speaking communities are migrating to different parts of the world where their main ways of communication remains in

Spanish. Therefore, it is relevant to have a valid Spanish version of the most used clinical interviews and assessment tools (Benuto, 2013).

An accurate and literal translation does not guarantee equivalence between the original and the cross-culturally adapted versions, nor does it assure the instrument's reliability or validity (Benuto, 2013). There is a wide spread concern that using tools developed for high-income country populations will miss cases in low and middle income countries. Though common mental disorders are prevalent in all regions worldwide, clinical presentation does differ between settings (Ali et al., 2016). This may be due to cross-cultural differences in somatization of symptoms and expression of emotional distress, leading to under-recognition or misidentification of psychiatric morbidity (Ali et al., 2016).

This study has greater credibility as it started with the professional translation process of the GMHAT/PC in Spanish by experienced Colombian and Spanish psychiatrists who were both fluent in Spanish as well in English and who were well versed to clinical practice in Spanish speaking countries. The most reliable gold standards employed in cross-cultural mental health research are diagnostic interviews conducted by qualified mental health professionals (Ali et al., 2016). Accordingly, in this study the validation was not exercised comparing GMHAT/PC with another scale, instead, it was but directly contrasted with interviews conducted by psychiatrists.

In order to carry out critical appraisal of findings of this study, it is essential to compare the validation of the GMHAT/PC Spanish version with other validated tools in Spanish.

8.2.1 Spanish Validated Tools

The vast majority of Spanish instruments show psychometric properties that indicate that they are valid screening tests for identifying mental disorders. Most of these tools are to identify specific disorders. The Spanish version of the ASSIST is considered to be a valid screening test for identifying substance use disorders in various health-care settings. (Rubio et al., 2014) on the other hand, Spanish versions of the CES-D and ZSDS are valid instruments for detecting depression in clinical settings and could be useful for both epidemiological research and primary clinical settings (Ruiz-Grosso et al., 2012) The Spanish version of the SCOF questionnaire shows excellent psychometric properties for the detection of eating disorders in primary care (Garcia-Campayo et al., 2005). The Spanish version of the HADS has been showed to be a reliable, sensitive and valid tool for the screening of psychiatric morbidity, especially mood and anxiety disorders, in general hospital out-patients (Herrero et al., 2003). The Spanish validated

DMI-18 scale has showed adequate sensitivity and specificity in the detection of affective disorders with similar results to those of the original version (Orive et al., 2010). The Spanish versions of the K-10 and the PHQ 9, for ascertaining anxiety and depression in primary care, show the same psychometric properties that the original ones (Vargas et al., 2011).

There are a few instruments that made some changes when they were translated into Spanish. For example, the BDI which is an adequate measure of depression in the Spanish-speaking population, some of its items were modified in the translated version of the BDI because some behaviours, attitudes and beliefs considered specific to depression had different cultural connotation in the Spanish-speaking population (Azocar, Areán, Miranda, & Muñoz, 2001). Some scales like the EPDS and the GDS have to use higher cut-off scores to diagnose depression in Spanish-speaking patients (Fernández-San Martín et al., 2002; Garcia-Esteve, Ascaso, Ojuel, & Navarro, 2003). The Spanish version of the GHQ has a slight decrease in their discriminative power but appears to be useful for screening for psychiatric morbidity among Spanish-speaking populations (Lobo et al., 1986; Wulsin, Somoza, & Heck, 2002).

To sum up, a great number of tools retain their psychometric properties when validated into Spanish. In some cases, it is necessary to modify some cutoffs for use within the Hispanic population.

8.2.1.1 Spanish Validated Clinical Interviews

The instruments described above are designed to identify specific symptoms or disorders. In contrast, GMHAT/PC is a clinical assessment tool developed to assess and identify a broad range of mental health problems. As a result, it is appropriate to compare it with similar tools (e.g. clinical interviews). It is argued that standardised diagnostic interviews systematically assess the relevant symptoms reducing misdiagnosis and/or a missed diagnoses (Benuto, 2013). Table 34 shows the validation properties of the Spanish translated interviews.

Interview	Version	Diagnosis criteria	Translation/ Back translation	Inter-rater reliability	Validity
CIDI	Spanish version (Spain)	DSM/ICD	Yes	Development process	Yes
MINI	Spanish version	DSM	Development process	No published evidence found	Development process

Table 34. Validation characteristics of Spanish interviews (adapted from Benuto 2013).

To develop a Spanish version of the CIDI a total of 372 questions were slightly modified (almost 7% of approximately 5000 questions in the survey) and incorporated into the Computer Assisted Personal Interview version of the CIDI (Navarro-Mateu et al., 2013). Most of the changes were minor — but important — linguistic adaptations, and others were related to specific Spanish institutions and currency (Navarro-Mateu et al., 2013). The instrument's mean completion administration time was 2h and 10mins.

Diagnoses made by the psychiatrists were used as a gold-standard in both interviews. The agreements between the MINI and the CIDI and the psychiatrists' diagnosis judgment were considered acceptable for the most prevalent disorders in primary care. Furthermore, it is reassuring that the validation of the Spanish version of GMHAT/PC is comparable to other widely used standardised interviews. The study has followed each of the steps used in the CIDI and MINI.

8.2.1.2 PRIME MD Spanish Validation

The Primary Care Evaluation of Mental Disorders (PRIME-MD) was designed as a diagnostic tool for the detection of the most common mental disorders in primary care and general population: mood disorders, anxiety, somatoform, alcohol use and eating disorders (Spitzer et al., 1999). It has been used worldwide and considered to have robust psychometric properties as outlined in Chapter 2. The PRIME-MD was later translated into Spanish. In consequence, it is appropriate to compare its validation processes with that of GMHAT/PC.

The Spanish validation of PRIME MD was done in Spain in 1999 (Baca et al., 1999). A total of 312 patients were interviewed by primary care physicians using PRIME MD and by psychiatrists using SCAN.

Table 35 compares the psychometric properties of PRIME MD (Baca et al., 1999) and GMHAT Spanish validation.

	PRIME MD			GMHAT/PC		
Diagnosis	Sensibility	Specificity	Kappa	Sensibility	Specificity	Kappa
Affective disorders	72.2	86	0.5	84	86	0.53
Anxiety	73.7	88.1	0.35	100	71	0.14
Somatoforms disorders	33.3	85.1	0.02	ND	ND	
Alcohol disorders	20	98	0.15	67	93	0.62
All diagnosis	81.4	66.1	0.45	92	77	0.59

Table. 35. Psychometric properties of PRIME MD and GMHAT Spanish validation.

The sensitivity values for GMHAT/PC are higher than the PRIME MD values. The specificity values are equal or higher for all diagnoses, except anxiety disorders. The mean time taken to complete the PRIME MD was 8.3 minutes (SD 5.5). In addition, the mean time taken to complete the GMHAT was 12.5 minutes. More importantly, it has to be considered that GMHAT/PC covers a greater number of diagnoses than PRIME MD.

In conclusion, the GMHAT/PC is as good as the PRIME MD and in some ways superior to assess broad range of mental disorders in primary care.

8.3 Feasibility of Using the GMHAT/PC Spanish Version

None of the participants declined participation in the validation study or gave any negative feedback. When asked what they thought of the interview, most expressed satisfaction that the GPs covered all aspects of their mental health using GMHAT/PC. The GPs who interviewed patients found GMHAT/PC user-friendly and asked whether they could continue using it in their routine practice.

A further study performed to test the feasibility showed that the Spanish version of GMHAT / PC can be used in a real clinical setting. In this case, GMHAT / PC can be incorporated into the routine assessment of patients attending a general medical hospital without interfering with the

clinical care they receive. The tool was equally accepted by medical patients. Initially, some of them appeared very surprised when they were told that it would assess their mental health. This is because they suspected their respective treating physician had observed any abnormal behaviour that resulted into this assessment. In addition to that, within the Colombian context, it is common to associate a psychiatric evaluation with the fact of being "gone bonkers". Once the purpose of the study was explained, none of the patients rejected signing the informed consent. In fact, some of them were interested in the results of the application of the tool.

General practitioners who participated in the study accepted the use of GMHAT / PC. They did not show any difficulty at the time of applying it, and showed themselves interested in continuing their use once the study was completed. It has to be added that the training time was very short for general practitioners who took part in the study. Roughly eight hours were spent on the training. I addition GPs evaluated the videos in their spare time. It is worth noting that these doctors had some prior knowledge on mental health as part of their medical training. Arguably, it is possible that in the event of training other professionals in primary care, more training time will be needed.

8.4 Use of the GMHAT/PC- Spanish Version in Medically-Ill Patients

It was reassuring to find that GPs were easily trained to carry out mental health interviews employing GMHAT/PC. Likewise, GPs reported that they were motivated to use computers and the GMHAT/PC in their future clinical assessments. The feedback obtained from GPs was positive after the study, and it became a part of their routine practice to ask questions about mental health. This also gave an opportunity to train staff in mental health through clinical tools, supported by specialists.

Equally, patients' experiences were positive as well. Inevitably, there was reluctance at the very beginning, but their viewpoints changed after the interviews. As a matter of fact, they were keen on the type of questions as they covered all aspects of their mental health, and they did not necessarily make them feel uncomfortable or judged upon their private life.

This study shows that it was possible to carry out interviews in a medical setting. Broadly speaking, some may indicate that a lack of time is frequently given as a reason for not making mental health assessments in medically-ill patients. The Spanish validated version of the GMHAT/PC-based assessment took a mean time of 12.5 minutes to complete the interviews. Another issue is that doctors are not familiarised or trained to ask the right questions to evaluate the mental state in their medical patients. They also lack or have limited knowledge about diagnostic criteria for mental illnesses. The use of semi-structured clinical interviews such as

GMHAT/PC could address some of these problems. Moreover, it is essential that doctors have short, reliable and easily usable tools that enable them to identify and manage patients with mental illnesses in medical settings.

It goes without saying that GMHAT/PC is becoming more and more close to identifying clinical cases of mentally-ill people who require help. As could be seen in the discussion section, GMHAT/PC is more of a diagnostic tool rather than a screening instrument. This means that the probability of false positives is very low and doctors who make use of GMHAT/PC have more certainty that these patients definitely need help. On top of that, it is important to note that none of the patients diagnosed by GMHAT/PC were previously identified by the medical team, but following their assessment, they were given appropriate help, advice, and treatment.

In this study the proportion of medically-ill patients with mental disorders was much less in comparison to other studies. Some authors reported a wide gap ranging between 7% and 60% of mental disorders in hospitalised patients (Franco et al., 2005; Kayhan et al., 2013). Moreover, in this study patients with mental illness were around 8%. This could be explained by several reasons. The assessment methods used in previous studies include MMSE (Minimental State Examination), HADS (Hospital Anxiety and Depression Scale) and CAGE (Costas, Prado, & Crespo, 2013; Schwartzmann et al., 2003). These screening tools are designed to identify symptoms, but not necessarily related to disorders with a diagnosis. Most of the previous studies focused on specific somatic diseases that are highly associated with mental disorders. For example, almost half of the patients with asthma and chronic respiratory illness met the diagnostic criteria for a mental disorder (Goodwin et al., 2014; Sharma et al., 2013). The prevalence of mental health conditions in cancer patients in acute care is 32% (Singer, Das-Munshi, & Brähler, 2010). The prevalence of mental problems in arthritis is 29% for anxiety, and 26 % for depression (Wang, Liu, & Wang, 2014). In this study, patients had a great variety of diagnosis. Some of them had serious diseases but most of them had physical problems, albeit not usually associated with mental problems. In the group of surgery patients, 25% of patients presented a diagnosis of acute appendicitis and hernias and none of them had a diagnosis of a mental illness of some sort. In the G/O group, 73% of patients were hospitalised for vaginal and caesarean delivery and none of them had mental problems. In contrast, 20 of the 455 patients had a cancer diagnosis, and almost half of them had a psychiatric diagnosis.

Psychiatric comorbidity is often one of the most important and unrecognised causes of disability associated with the medical illness. Furthermore, the role of psychosocial and psychiatric interventions as secondary and tertiary prevention i.e. the prevention of the progression or recurrence of a disease and the prevention of complications, respectively, is also important

(Gupta & Gupta, 2003). These medical conditions generally present themselves with two features: they are often exacerbated by psychosocial stress, and they may be comorbid with major psychiatric disorders such as depressive illnesses. Recognition of patients, who may be at a high risk of developing psychosocial and psychiatric comorbidity, is therefore a very important part of the overall management of these patients (Gupta & Gupta, 2003). By skilling staff in mental health who provide general medical care, a large proportion of patients who remain undetected and untreated will receive right help and treatment (Kathol & Clarke, 2005).

8.5 Strengths of the Study

A good sample size and the subjects are the main strength of this study. Previous GMHAT/PC studies used samples of 50 to 215 patients. Contrastingly, this study interviewed 299 patients in the first part and 455 in the second part, making that a total of 754 patients. This study used consultant psychiatrists' diagnoses as a gold standard rather than other measurement or diagnostic tools, whilst trying to keep the GMHAT/PC assessment as close to routine clinical practice as possible. Consultant psychiatrists and professionals carrying out the assessment in the study were unaware of each other's diagnoses. Also, GPs had no knowledge of the patients before the assessment.

Another strength of this study is a sample with varying degrees of psychopathology in different health care settings. The sample was recruited from three hospitals and out-patient facilities. This is perhaps one of the biggest study towards the validation of GMHAT/PC. The way the sampling was performed, including all kinds of patients, did allow to observe how the tool behaved in a real clinical setting. In their daily practice, GPs see all sorts of patients with different problems. This is why; it was significant to look at the effectiveness of GMHAT / PC with all patients, including cases with a high complexity.

Clinical diagnoses were made by trained psychiatrists in real settings based on an independent clinical interview using ICD-10 criteria. The patients, where many of them had more than one diagnosis, made the study more robust. This not only enriched the analysis, but also reflected routine clinical practice. Besides, some of the patients were in remission or partial remission of their mental illness. Unquestionably, this allowed a comparison between symptomatic patients, and patients who no longer presented symptoms (or a mental illness).

The GPs' diagnosis obtained during GMHAT/PC interview, allowed a comparison of their diagnosis with that of the psychiatrist's and GMHAT/PC' diagnosis. This allowed to examine those cases of disagreement, when the GP's criteria were closer to the psychiatrist's, and where they were closer to those of the tool. Additionally, the fact of counting on a GP's diagnosis

offers the chance of identifying what diagnosis presented the most difficulty, so that the mental health training of GPs can be modified accordingly.

The inclusion of the PTSD diagnosis is another marked strength of this study. It is significant that developers of GMHAT / PC have decided to include it in the other versions of the tool.

8.6 Limitations of the Study

The relatively small number of subjects with some disorders (hypochondriasis, eating disorders) in this study limits the validation of some psychiatric disorders. This is a partial limitation because when the methodology of this study was proposed, it sought representation of the most prevalent and important diagnoses in the clinical practice (e.g. depression, anxiety, psychosis, and organic disorders). Still, given the variety of GMHAT/PC diagnostic options, it would be interesting to conduct studies with specific populations to assess the psychometric properties of other diagnoses.

Since the Spanish version included the PTSD diagnosis for the very first time, it would be interesting, to analyze the psychometric properties of the tool on that disorder. Out of the 299 interviewed patients in the validation stage, only one of them had a PTSD diagnosis from both the psychiatrist and GMHAT/PC. It is suggested that GMHAT/PC applied to populations that has a high prevalence this disorder in order to evaluate the performance of the tool.

Of course, the vast majority of interviews were carried out in mental health units. That implies a greater number of psychosis and Bipolar Mood disorder diagnoses, and fewer cases of anxiety and depression. The GMHAT/PC Spanish version is proposed to be used in primary care level, where the prevalence of cases is different than in a hospital setting.

All things considered, it is desirable to use a greater number of GPs to conduct the interviews. A small number of GPs can lead to biased viewpoints, if they happen to have particular interests in mental health.

8.7 Implications of the Study: Potential Uses of the Spanish Version for GMHAT/PC

GMHAT/PC is a versatile tool that can have multi-purpose utilities such as improving clinical practice, assisting training and education, administrative purposes, usage within medical settings such as liaison medicine, research conducting clinical and epidemiological studies, and International comparisons.

8.7.1 Clinical Practice

Delivering mental health services in primary healthcare includes diagnosing and treating people with mental disorders, and ensuring that frontline workers are capable of applying key psychosocial and behavioural science skills. For example, interviewing, counselling and interpersonal skills in their work in order to improve overall health outcomes in primary healthcare (WHO, 2008). For that reason, it is important to count on instruments to help primary healthcare workers in diagnosing and interviewing within clinical settings.

The results of this study confirm the value of this tool for clinical purposes or in a clinical environment. As outlined in the previous sections, the advantage of GMHT/PC over other instruments used in primary care is its ability to provide clinically relevant diagnoses. This allows the physician to take immediate action to solve the patient's problem as far as possible without having to refer the patient to a specialist. In countries like Colombia, the waiting time to see a specialist is between one or three months. Using information technology will let GMHAT/PC-based assessments to take place more easily in community settings thus improving patient experience. This could also diminish travelling times for patients who live in rural areas, and whose incomes are not high enough to cover for all the travel expenses.

Use of GMHAT/PC could demonstrate that frontline workers can be incorporated successfully into an adequate case-detection system that is community and population based and that workers can be integrated meaningfully into the pathway to care of patients living in low-resourced settings. An epidemiological study of psychiatric disorders in rural populations shows that GMHAT/PC can be used as a standardised diagnosing tool in primary health care centres helping the primary care workers to diagnose psychiatric cases in a short span of time and also in referring them to specialty centres (personal communication – see appendix 5). Another study that investigated the use of electronic screening for mental health in a rural primary care setting indicated that subjects found the computer technology useful (Thomas, Macdowell, & Glasser, 2012). This tool, just as GMHAT/PC does, provided a printout of the e-screening results to both the patient and the healthcare provider which increased the power of intervention to inform clinical practice (Thomas et al., 2012).

One relevant use of a computer assisted tool like the GMHAT/PC may be implemented in a tele-psychiatry model, such as those implemented in countries where limited health care infrastructure exists (Thara & Sujit, 2013). Applying this to remote settings with no psychiatrists may contribute to prudent gains in reducing stigma by providing treatment at the community level, particularly in rural areas. Telepsychiatry using a computerised, semi-

structured clinical interview to assess and identify mental disorders in primary care is feasible. It increases access to care, enables specialty consultation, yields positive outcomes, allows reliable evaluation, has few negative aspects in terms of communication, generally satisfies patients and providers, facilitates education, and empowers parties using it (Hilty, Marks, Urness, Yellowlees, & Nesbitt, 2004).

Clinical practice guidelines can be an important component of strategies to improve quality of care. However, the consensus in the field is that distributing practice guidelines to primary care providers does not, by itself, improve quality of care or patient outcomes. It can be difficult for providers to use such guidelines without additional help and changes in the service delivery system (Unützer, Schoenbaum, Druss, & Katon, 2006). The original version of the GHMAT/PC has in-built treatment guidelines for each of the problems identified by the tool. In the future, we will install the Spanish version of the guidelines adapted to the relevant population.

Integrated primary mental health services are complementary with secondary and tertiary level mental health services. The referral letter in the form of report generated at the end of the GMHAT interview is useful for prompt communication with the specialist if required. Assessment output is immediately available allows GPs to make an evidence based management plan for patients. The absence of a good referral system between primary and secondary care can severely undermine the effectiveness of mental healthcare delivered at primary health-care level. Effective referral links between primary, secondary and tertiary levels of care need to be in place (WHO, 2008).

8.7.2 Education and Training

Integrating mental health services into primary healthcare can be an important solution to addressing human resource shortages to deliver mental health interventions (WHO, 2008). That implies improving the human resource capacity for mental health, specifically to detect and treat mental disorders.

Besides, GMHAT/PC lends itself quite well to be utilised for training clinicians. It is an extremely useful tool to acquire skills of a thorough mental health assessment. This includes areas of history taking, mental state examination, understanding the impact on quality of life of individuals and understanding the concept of risk assessment. It may be also a feasible option of training non-physician primary care providers to implement evidence-based guidelines for patient care. When frontline workers have received mental health training they

can attend to the physical health needs of people with mental disorders as well as the mental health needs of those suffering from infectious and chronic diseases (WHO, 2008).

What is more, GMHAT/PC could facilitate the delivery of evidence-based intervention for a set of priority mental health conditions by non-specialists, especially those working in resource-constrained settings. Some studies have demonstrated the feasibility of using a specially designed cascade training to build the skills of primary care workers (Gureje et al., 2015). That kind of approach ensured that there was substantial retention of the quality of training through the cascade and in the knowledge and skills acquired by attending trainees.

Training basic mental health skills should go beyond simply increasing knowledge. It is essential to provide trainees with skills they can use in daily practice, and that enhance their clinical competency and self- confidence (Ventevogel, 2014). Thus, GMHAT/PC training encourages front line workers to feel competent to identify and treat people with mental illnesses in their primary care facilities.

By way of illustration, a study about training of mental health workers found that, in comparison to a classic lecture-type brief training, a format using interactive short lectures, group discussions and role-play, emphasizing practical diagnostic algorithms, led to significantly improved detection and management of patient mental disorders by paramedical staff in health centres (Kauye, Jenkins, & Rahman, 2014). The GMHAT/PC training programme include presentations, outline of all mental disorders, interview video practice on ratings and live role play using GMHAT/PC interviews. Even frontline workers with previous mental health experience require an opportunity for acquired knowledge to be reinforced through reviewing training activities in order to maintain or even enhance clinical skills and competencies.

In some places they could only be implemented in a limited number of training workshops because of other demands on their trainees' time (Gureje et al., 2015). The University of Chester has prepared a training package that can be delivered in a one-to-three-days basis depending on the mental health background of training recipients. That represents an advantage in comparison to training programmes that require a great deal of time in their application. This approach provides a sustainable, cheap and yet effective approach towards imparting the necessary skills to implement the mental health in primary care.

Training sessions that are appended the use of GMHAT/PC allow medical and nurse students to comprehend basic interviewing techniques, psychopathology and diagnostic guidelines. Training programmes for medical students should cover the fundamental knowledge and skills required to make effective referrals to mental health providers for patients who do not

respond to first-line treatments in general medical settings or who prefer treatment from a mental health specialist (Unützer et al., 2006). A recently issued article comparing the effects of traditional education with the integrated education type using GMHAT/PC found the latter to be more effective. In the same study, mean change of score of students from pre-test to post-test in the GMHAT group was significantly higher ($p<0.001$) than in control group. More than 90 % students liked and retained the subject better with the new teaching methodology, only 9.3% felt it more time consuming. The majority of Faculty members had liked this GMHAT method (personal communication – see appendix 6).

Researcher Tejada has used GHMAT/PC for teaching medical students and training directed to clinical psychologists. As for the feedback obtained from such activities, it turned out to be generally positive. She has utilized the videos made to assess the inter-rater reliability independently to teach how a clinical interview, semiotics and diagnostic categories are performed. She reports that in the students she has trained on the mechanics of GMHAT, she found two interesting behaviours. On the one hand, they began to apply the tool not only with their assigned patients, but also with their relatives and acquaintances. As a result, they found in some of them the presence of cases of mental health problems. On the other hand, once the term workload was over, they had memorised GMHAT questions, and despite not having the tool they were able to continue using the same scheme to assess the patients.

8.7.3 Administrative Uses

Recording systems need to be set up to allow for continuous monitoring, evaluation and updating of mental health activities: mental health data need to be routinely recorded in patients' files and integrated in the overall general health information system at primary healthcare level, in order to be used for monitoring, evaluation and planning, and service improvements (WHO, 2008). The implementation of the GMHAT/PC in different services may be relevant to data management. The systematization of the interviews allowed bringing a clinical and statistical monitoring of care. The information can be uploaded into electronic health systems directly thus ensuring better use of clinical time.

In Colombia, many institutions have difficulties with electronic filing, and subsequent data retrieval of medical records. This makes it particularly difficult to find patients and specific data, especially when there are ongoing research projects. Conveniently, tools such as GMHAT/PC can help to overcome these difficulties by providing proper filing of medical records. The way data is recorded unto this tool also facilitates and avoiding typing errors, in the event that someone wants to build a database manually.

8.7.4 Use in Medical Settings

Mentally-ill patients undergoing a crisis, and seek for attention at critical access hospital emergency rooms, often face exorbitant awaiting hours to be seen by a trained mental health provider. Moreover, patients may be discharged from the hospital before receiving an evaluation or boarded on a hospital bed for observation, reducing quality and increasing costs (Southard, Neufeld, & Laws, 2014). A study that examined the effectiveness of an emergency tele-mental health evaluation service in a rural hospital, found that telepsychiatry appears to be an effective intervention for mentally-ill patients by providing more timely access to mental health evaluations in rural hospital emergency departments. GMHAT/PC characteristics allow the tool to be used in a telepsychiatry model with reductions in times to treatment and door-to-consult times.

Telepsychiatry has been suggested as an option for increasing rural mental health service access (Thomas et al., 2012). This would involve professionals in distant areas using video conferencing to communicate with patients. More significantly, some studies show that patients and primary care physicians both agree that telehealth is an excellent option if local mental health providers are not available (Thomas et al., 2012).

When consulting in tertiary and secondary level mental health services, indirect health expenditures (transportation, loss of productivity related to the time spent in accompanying the patient to a hospital, etc.) add up to the cost of consultation and medications (WHO, 2008). If primary care health workers have the skills to integrate mental health services into primary healthcare, healthcare costs will be greatly reduced.

8.7.5 Clinical and Epidemiological Studies

The development of scientific research on mental health is crucial to help guide investments in services and interventions that effectively reduce the burden of mental disorders (Razzouk, Zorzetto, & Mari, 2009) requirement. Publications released by Latin-American countries account for less than 1% of the global publications in the area of mental health. Some of the barriers to scientific development include low investment in research, lack of skilled workers in the area of mental health professionals, poor quality of investigations, the low rate of submission of articles to international journals, difficulties with language, and the difficulty of access to databases and periodicals (Razzouk et al., 2009).

With the lack of human resources for mental health in mid-to-low income countries, it is imperative to develop and validate measures to conduct epidemiological and clinical work for mental health problems at the primary-care settings. Equally important is to adopt novel

methods for detecting mental health problems in low-resourced contexts. Particularly, that would offer an explanation on how traditional case-identification methods are largely unsustainable in settings where mental health services barely exist or are inaccessible for most people (Burns, 2015).

Structured interviews such as the CIDI and the Clinical Interview Schedule (CIS-R) may be expensive and impractical to use in large, epidemiological studies (Head et al., 2013). However, GMHAT/PC can be used to enhance clinically relevant research. Moreover, data can be collected in routine clinical practice with patients in clinical settings. The analysis of this data can lead to a large number of studies. The characteristics of GMHAT/PC and its adequate sensitivity are reasons enough to be used as a screening instrument in the primary-care, and allow the researchers to choose for a global assessment or a specific diagnosis as required by them for specific contexts and needs.

A great deal of research in Latin-America has been conducted by psychiatrists. However, sadly, there is very little published research by psychologists, nurses and social workers. Multidisciplinary research is also needed on the particular social and psychological factors which play an important part in the aetiology and course of mental disorders. GMHAT has showed strong validity results when was applied by GPs, nurses and psychologists. Without a doubt, that represents an advantage for its research use in frontline workers.

8.7.6 International Comparisons

Among the necessary measures to promote mental health research in Latin-America, we find a need in encouraging greater cooperation between national and international research centres by the way of multicentre studies (Razzouk et al., 2009). The internationalization of the tool, its translation and use in different countries will permit further comparison of data internationally. GMHAT/PC Spanish version facilitates to establish comparable epidemiological cohorts, with a view to determining how incidence rates vary across geographical, socio-economic and cultural contexts. Conditions of poverty, deprivation and social inequality characteristic of many low and middle income countries will impact in the prevalence of mental disorders. Conversely, evident characteristics of Latin-American countries such as strong family support could act as protection factors.

8.8 Future Developments of the Global Mental Health Assessment Tool

GMHAT will need to evolve with technological developments, keeping in mind service and resource needs. Some of the future developments that are recommended are as follows:

8.8.1 Develop the Android and Apple Applications for the Global Mental Health Assessment Tool

Technology solutions have provided a means to overcome many of the barriers associated with delivering mental health care. MHealth (mobile health care), a rapidly growing area that relies heavily on mobile applications deployed to cell-phones and handheld devices, represents a new frontier for delivering mental health treatment (Price et al., 2014). This wave of care has been driven by the rapid proliferation of smartphones.

Furthermore, there is a large and ever increasing number of mobile phone health, wellness, and medical applications on the market. With the increasing use of smartphones in the clinical practice, developing an Android or an Apple application would contribute in making GMHAT notably more accessible. It goes without saying that in rural areas of Colombia and South America there is a notoriously low access to both computers and internet, albeit almost all GPs have smartphones. All things considered, the release of this app would also increase the user friendliness of the tool. This would mean more people can access the tool, and make use of it in their day-to-day practise.

8.8.2 Find Ways to Integrate with Various Information Systems

An electronic health record (EHR) is an evolving concept defined as a longitudinal collection of electronic health information about individual patients and populations. Primarily, it will be a mechanism for integrating health care information currently collected in both paper and electronic medical records (EMR) for the purpose of improving quality of care. EMR has the potential to improve the coordination of healthcare in Latin-American countries. If GMHAT/PC has to fulfil a well-built potential, then ways to integrate the tool with the different health record systems will need to be developed. This will provide enormous potential for health research but also present data governance challenges. Having psychiatric EMR that were accessible to non-psychiatric physicians correlated with improved clinical care as measured by lower readmission rates specific for psychiatric patients (Kozubal et al., 2013). The potential benefits of the application of an electronic medical record (EMR) in medical care are well recognised. However, if these benefits are to be accomplished, professionals must adopt and utilise EMR as part of their practice (Boyer, Renaud, Baumstarck-Barrau, Fieschi, & Samuelian, 2010).

Chapter 9

Conclusions, recommendations and reflection

9.1 Conclusions

It is crucial to improve general practitioners' mental illness recognition skills in their clinical practice. This could possibly be achieved by training GPs in mental health with an assistance of using validated clinical tools that are practical and user friendly in their daily practice.

There is a wide variety of instruments and interview schedules available to be used to identify mental illness in primary care. Short instruments that perform an overall assessment of the mental state are preferred over those that are specific to a single disorder.

The GMHAT/PC appears to be comprehensive, yet practical instrument that can easily be adopted in primary care.

The finding of this study suggest that GMHAT/PC Spanish version used by GPs detected mental disorders accurately and it was feasible to use GMHAT/PC (Spanish version) in Latin America settings.

It was determined that GMHAT-PC is more likely to identify not only clinical cases of mental illness, but also patients who need help. Thus, it can be argued that GMHAT-PC is more of a diagnostic instrument than a screening instrument. It goes without saying that physicians and practitioners can be trained to identify mental illnesses using computer-assisted tools such as GMHAT-PC. A holistic approach of providing care to such patients may improve their overall outcome and quality of life.

9.2 Recommendations

The validation process of the GMHAT / PC - Spanish version is just the beginning. The real success is in its dissemination to frontline health workers and GPs. Dissemination refers to the methods used for the distribution and communication of the GMHAT / PC to the target audience. Unlike diffusion, dissemination refers to a more active communication process that aims to improve knowledge and acceptance of the tool.

In this sense the following recommendations are given:

• There must be a constant update of the website. This should include the possibility of downloading the Spanish version as currently only the English version is available. Similarly, on the page should be different publications and information on the places where training can be obtained.

• Use of GMHAT / PC should be included as a part of clinical training to medical and nursing students. This will allow us to see its usefulness beyond the clinical environment emphasizing its educational value.

• The training center in Colombia should be strengthened as a reference point for other Latin American countries.

• The use of the tool should be equally valuable in Spain.

• Strategic alliances should be established with researchers from other countries in order to collaborate in the validation of GMHAT / PC in other languages of great impact such as Portuguese and French.

9.3 Reflection

This thesis summarizes my experience in the completion of my doctoral studies in the UK. This has been a great challenge to take this type of work, carry out and complete in a given time. I am aware that some overseas people having started their PhD studies never finish them. The challenge becomes even greater when the studies are carried out in a University of a foreign country, in a different language and in a country of high academic tradition.

Besides the academic requirement, the greatest challenge for me was due to cultural differences of expression, which made it difficult to put the concepts eloquently, that are written in this work. It is difficult to create documents and content those are understandable for audiences from very different backgrounds.

From my entrance to the university to the present day I had the opportunity to present the results of my work in two international congresses and in one national congress.

I have also published three related articles, two of them in indexed international journals and one in a national journal frequently consulted by professionals in my country. I also published a chapter on the validation in Spanish of GMHAT in the book: Mental health training for health professionals: Global Mental Health Assessment Tool.

I currently belong to the project for Strengthening Research Capacity in Medical Informatics in Colombia and Latin America. As part of this project I find myself conducting research on traumatic brain injury and psychiatric disorders, conducting trainings on the use of GMHAT/PC and performing presentations under the title Trauma and Mental Health Electronic Data Analysis Tools: Integrations to Explore Interactions and Policy Changes.

References

Alarcón, R. (2002). Trastorno por estrés postraumático: estudios en veteranos de guerra norteamericanos y su relevancia para América Latina. *Revista chilena de Neuro-psiquiatría, 40*, 35-47.

Alejo, E. G., Rueda, G., Ortega, M., & Orozco, L. C. (2007). Estudio epidemiológico del trastorno por estrés postraumático en población desplazada por la violencia política en Colombia. *Universitas psychologica*, *6*(3), 623-636.

Ali, G.-C., Ryan, G., & De Silva, M. J. (2016). Validated Screening Tools for Common Mental Disorders in Low and Middle Income Countries: A Systematic Review. *PloS one*, *11*(6), e0156939.

Amoran, O., Ogunsemi, O., & Lasebikan, V. (2012). Assessment of mental disorders using the patient health questionnaire as a general screening tool in western Nigeria: A community-based study. *J Neurosci Rural Pract, 3*(1), 6-11. doi:10.4103/0976-3147.91922

Ansseau, M., Dierick, M., Buntinkx, F., Cnockaert, P., De Smedt, J., Van Den Haute, M., & Vander Mijnsbrugge, D. (2004). High prevalence of mental disorders in primary care. *J Affect Disord, 78*(1), 49-55.

Arango-Dávila, C., Rojas, J. C., & Moreno, M. (2008). Análisis de los aspectos asociados a la enfermedad mental en Colombia y la formación en psiquiatría *Revista Colombiana de Psiquiatría*, *37*(4), 26.

Armstrong, G., Kermode, M., Raja, S., Suja, S., Chandra, P., & Jorm, A. F. (2011). A mental health training program for community health workers in India: impact on knowledge and attitudes. *Int J Ment Health Syst, 5*(1), 17. doi:10.1186/1752-4458-5-17

Asnaani, A., Richey, J. A., Dimaite, R., Hinton, D. E., & Hofmann, S. G. (2010). A cross-ethnic comparison of lifetime prevalence rates of anxiety disorders. *J Nerv Ment Dis, 198*(8), 551-555. doi:10.1097/NMD.0b013e3181ea169f

Avasthi, A., Varma, S. C., Kulhara, P., Nehra, R., Grover, S., & Sharma, S. (2008). Diagnosis of common mental disorders by using PRIME-MD Patient Health Questionnaire. *Indian J Med Res, 127*(2), 159-164.

Azocar, F., Areán, P., Miranda, J., & Muñoz, R. F. (2001). Differential item functioning in a Spanish translation of the Beck Depression Inventory. *J Clin Psychol, 57*(3), 355-365.

Baader M, T., Molina, J. L., Venezian B, S., Rojas C, C., Farías S, R., Fierro-Freixenet, C., . . . Mundt, C. (2012). Validación y utilidad de la encuesta PHQ-9 (Patient Health

Questionnaire) en el diagnóstico de depresión en pacientes usuarios de atención primaria en Chile. *Revista chilena de neuro-psiquiatría, 50*(1), 10-22.

Baca, E., Saiz, J., Aguera, L., Caballero, L., Fernandez-Liria, A., Ramos, J., . . . Porras, A. (1999). [Validation of the Spanish version of PRIME-MD: a procedure for diagnosing mental disorders in primary care]. *Actas Esp Psiquiatr, 27*(6), 375-383.

Bakker, I. M., Terluin, B., van Marwijk, H. W., van Mechelen, W., & Stalman, W. A. (2009). Test-retest reliability of the PRIME-MD: limitations in diagnosing mental disorders in primary care. *Eur J Public Health, 19*(3), 303-307. doi:10.1093/eurpub/ckn149

Ballenger, J. C., Davidson, J. R., Lecrubier, Y., Nutt, D. J., Kirmayer, L. J., Lépine, J. P., . . . Ono, Y. (2001). Consensus statement on transcultural issues in depression and anxiety from the International Consensus Group on Depression and Anxiety. *J Clin Psychiatry, 62 Suppl 13*, 47-55.

Benuto, L. T. (2013). *Guide to psychological assessment with Hispanics*. New York: Springer.

Beusenberg, M., Orley, J. H., & World Health Organization. (1994). A User's guide to the self reporting questionnaire (SRQ.

Bhui, K., Mohamud, S., Warfa, N., Craig, T. J., & Stansfeld, S. A. (2003). Cultural adaptation of mental health measures: improving the quality of clinical practice and research. *Br J Psychiatry, 183*, 184-186.

Boyer, L., Renaud, M. H., Baumstarck-Barrau, K., Fieschi, M., & Samuelian, J. C. (2010). [Establishment of an electronic medical record in a psychiatric hospital: evolution of professionals' perceptions]. *Encephale, 36*(3), 236-241. doi:10.1016/j.encep.2009.05.004

Breuer, E., Stoloff, K., Myer, L., Seedat, S., Stein, D. J., & Joska, J. (2012). Reliability of the lay adherence counsellor administered substance abuse and mental illness symptoms screener (SAMISS) and the International HIV Dementia Scale (IHDS) in a primary care HIV clinic in Cape Town, South Africa. *AIDS Behav, 16*(6), 1464-1471. doi:10.1007/s10461-011-0067-z

Broadhead, W. E., Leon, A. C., Weissman, M. M., Barrett, J. E., Blacklow, R. S., Gilbert, T. T., . . . Higgins, E. S. (1995). Development and validation of the SDDS-PC screen for multiple mental disorders in primary care. *Arch Fam Med, 4*(3), 211-219.

Brodaty, H., Pond, D., Kemp, N. M., Luscombe, G., Harding, L., Berman, K., & Huppert, F. A. (2002). The GPCOG: a new screening test for dementia designed for general practice. *J Am Geriatr Soc, 50*(3), 530-534.

Burns, J. K. (2015). Why searching for psychosis in diverse settings is important for global research and mental health systems development. *Soc Psychiatry Psychiatr Epidemiol, 50*(6), 895-897. doi:10.1007/s00127-015-1056-8

Buschke, H., Kuslansky, G., Katz, M., Stewart, W. F., Sliwinski, M. J., Eckholdt, H. M., & Lipton, R. B. (1999). Screening for dementia with the memory impairment screen. *Neurology, 52*(2), 231-238.

Cameron, I. M., Cardy, A., Crawford, J. R., du Toit, S. W., Hay, S., Lawton, K., . . . Reid, I. C. (2011). Measuring depression severity in general practice: discriminatory performance of the PHQ-9, HADS-D, and BDI-II. *Br J Gen Pract, 61*(588), e419-426. doi:10.3399/bjgp11X583209

Camozzato, A. L., Godinho, C., Kochhann, R., Massochini, G., & Chaves, M. L. (2015). Validity of the Brazilian version of the Neuropsychiatric Inventory Questionnaire (NPI-Q). *Arq Neuropsiquiatr, 73*(1), 41-45. doi:10.1590/0004-282X20140177

Campbell-Sills, L., Norman, S. B., Craske, M. G., Sullivan, G., Lang, A. J., Chavira, D. A., . . . Stein, M. B. (2009). Validation of a brief measure of anxiety-related severity and impairment: the Overall Anxiety Severity and Impairment Scale (OASIS). *J Affect Disord, 112*(1-3), 92-101. doi:10.1016/j.jad.2008.03.014

Campo, A. (2005). Prevalencia de trastornos mentales en pacientes medicoquirúrgicos: ¿Son válidos los resultados? *Colombia Médica, 36*(4), 3.

Carr, V. J., Neil, A. L., Halpin, S. A., Holmes, S., & Lewin, T. J. (2003). Costs of schizophrenia and other psychoses in urban Australia: findings from the Low Prevalence (Psychotic) Disorders Study. *Aust N Z J Psychiatry, 37*(1), 31-40.

Carvajal, C. (2002). Trastorno por estrés postraumático: aspectos clínicos. *Revista chilena de neuro-psiquiatría, 40*, 20-34.

Castro, J., Billick, S. B., & Swank, A. C. (2015). Utility of a New Spanish RQC and PSC in Screening with CBCL Validation. *Psychiatr Q*. doi:10.1007/s11126-015-9391-1

Castro-Camacho, L., Escobar, J. M., Sáenz-Moncaleano, C., Delgado-Barrera, L., Aparicio-Turbay, S., Molano, J. C., & Noguera, E. (2012). Salud mental en el hospital general: resultados del Cuestionario de Salud del Paciente (PHQ) en cuatro servicios de atención. *Revista Colombiana de Psiquiatría, 41*(1), 61-85.

Cañón, O. I., & Rodríguez, C. I. (2011). Introducción al uso de QALYs y EQ-5D en la evaluación de tecnologías en Colombia. *Revista CIFE: Lecturas de Economía Social, 13*(19).

Cervantes, I. (2015). El Español: Una lengua viva. Informe 2015.

Chishinga, N., Kinyanda, E., Weiss, H. A., Patel, V., Ayles, H., & Seedat, S. (2011). Validation of brief screening tools for depressive and alcohol use disorders among TB and HIV patients in primary care in Zambia. *BMC Psychiatry, 11*, 75. doi:10.1186/1471-244X-11-75

Chisholm, D., Healey, A., & Knapp, M. (1995). QALYs and mental health care. *Mental Health Research Review, 2*, 17-19.

Constaín, G. A., Ricardo Ramírez, C., Rodríguez-Gázquez, M. e. L., Alvarez Gómez, M., Marín Múnera, C., & Agudelo Acosta, C. (2014). [Diagnostic validity and usefulness of the Eating Attitudes Test-26 for the assessment of eating disorders risk in a Colombian female population]. *Aten Primaria, 46*(6), 283-289. doi:10.1016/j.aprim.2013.11.009

Corruble, E., Ginestet, D., & Guelfi, J. D. (1996). Comorbidity of personality disorders and unipolar major depression: a review. *J Affect Disord, 37*(2-3), 157-170.

Costas, M., Prado, V., & Crespo, J. M. (2013). Ansiedad y depresión entre los pacientes hospitalizados en el complejo hospitalario de Ferrol. *Cuadernos de Medicina Psicosomática y Psiquiatría de Enlace, 107*, 7.

Dahl, A. A., Kruger, M. B., Dahl, N. H., Karlsson, H., Von Knorring, L., & Stordal, E. (2009). SPIFA-A presentation of the Structured Psychiatric Interview for General Practice. *Nord J Psychiatry, 63*(6), 443-453. doi:10.3109/08039480902874769

Daradkeh, T. K., Ghubash, R., el-Rufaie, O. E., & Abou-Saleh, M. T. (1999). The rationale, development and reliability of a new screening psychiatric instrument. *Soc Psychiatry Psychiatr Epidemiol, 34*(4), 223-228.

Davis, S. M., Whitworth, J. D., & Rickett, K. (2009). Clinical inquiries. What are the most practical primary care screens for post-traumatic stress disorder? *J Fam Pract, 58*(2), 100-101.

de Azevedo Marques, J. M., & Zuardi, A. W. (2008). Validity and applicability of the Mini International Neuropsychiatric Interview administered by family medicine residents in primary health care in Brazil. *Gen Hosp Psychiatry, 30*(4), 303-310. doi:10.1016/j.genhosppsych.2008.02.001

de Beurs, E., Tielen, D., & Wollmann, L. (2014). The dutch social interaction anxiety scale and the social phobia scale: reliability, validity, and clinical utility. *Psychiatry J, 2014*, 360193. doi:10.1155/2014/360193

de Galvis, Y. T., Mejia, R., Sierra, G., Bareno, J., & Berbesi, D. Y. (2012). Indicadores de situación de riesgo de salud mental población desplazada Colombia. *Revista del Observatorio Nacional en Salud Mental, 1*(1), 28-38.

de la Torre, A. Y., Oliva, N., Echevarrieta, P. L., Pérez, B. G., Caporusso, G. B., Titaro, A. J., ... & Mac Mullen, M. (2016). Major depression in hospitalized Argentine general medical patients: Prevalence and risk factors. *Journal of affective disorders, 197*, 36-42.

Delgadillo, J., Payne, S., Gilbody, S., Godfrey, C., Gore, S., Jessop, D., & Dale, V. (2011). How reliable is depression screening in alcohol and drug users? A validation of brief and ultra-brief questionnaires. *J Affect Disord, 134*(1-3), 266-271. doi:10.1016/j.jad.2011.06.017

Faghri, N. M. A., Boisvert, C. M., & Faghri, S. (2010). Understanding the expanding role of primary care physicians (PCPs) to primary psychiatric care physicians (PPCPs): enhancing the assessment and treatment of psychiatric conditions. *Mental health in family medicine, 7*(1), 17-25.

Farvolden, P., McBride, C., Bagby, R. M., & Ravitz, P. (2003). A Web-based screening instrument for depression and anxiety disorders in primary care. *J Med Internet Res, 5*(3), e23. doi:10.2196/jmir.5.3.e23

Fernández, A., Saameño, J. A., Pinto-Meza, A., Luciano, J. V., Autonell, J., Palao, D., . . . investigators, D. (2010). Burden of chronic physical conditions and mental disorders in primary care. *Br J Psychiatry, 196*(4), 302-309. doi:10.1192/bjp.bp.109.074211

Fernández-San Martín, M., Andrade-Rosa, C., Andrade, C., Molina, J. D., Molina, J., Muñoz, P. E., . . . Silva, A. (2002). Validation of the Spanish version of the geriatric depression scale (GDS) in primary care. *Int J Geriatr Psychiatry, 17*(3), 279-287.

Fink, P., Ewald, H., Jensen, J., Sorensen, L., Engberg, M., Holm, M., & Munk-Jorgensen, P. (1999). Screening for somatization and hypochondriasis in primary care and neurological in-patients: a seven-item scale for hypochondriasis and somatization. *J Psychosom Res, 46*(3), 261-273.

Fletcher, R. H., Fletcher, S. W., & Fletcher, G. S. (2014). Abnormality. In L. W. Wilkins (Ed.), *Clinical Epidemiology: The Essentials*: Lippincott Williams & Wilkins.

Forensis, I. E. Bogotá: Instituto Nacional de Medicina Legal; 2015. In.

Franco, J., Gómez, P., Ocampo, M. V., Vargas, A., & Berríos, D. (2005). Prevalencia de trastornos psiquiátricos en pacientes medicoquirúrgicos hospitalizados en la Clínica Universitaria Bolivariana de Medellín, Colombia. *Revista Colombia Médica, 36*(4), 8.

Frasquilho, D., Matos, M. G., Salonna, F., Guerreiro, D., Storti, C. C., Gaspar, T., & Caldas-de-Almeida, J. M. (2016). Mental health outcomes in times of economic recession: a systematic literature review. *BMC Public Health, 16*(1), 115. doi:10.1186/s12889-016-2720-y

French, P., Owens, J., Parker, S., & Dunn, G. (2012). Identification of young people in the early stages of psychosis: validation of a checklist for use in primary care. *Psychiatry Res, 200*(2-3), 911-916. doi:10.1016/j.psychres.2012.07.040

Gache, P., Michaud, P., Landry, U., Accietto, C., Arfaoui, S., Wenger, O., & Daeppen, J. B. (2005). The Alcohol Use Disorders Identification Test (AUDIT) as a screening tool for excessive drinking in primary care: reliability and validity of a French version. *Alcohol Clin Exp Res, 29*(11), 2001-2007.

Garcia-Campayo, J., Sanz-Carrillo, C., Ibañez, J. A., Lou, S., Solano, V., & Alda, M. (2005). Validation of the Spanish version of the SCOFF questionnaire for the screening of eating disorders in primary care. *J Psychosom Res, 59*(2), 51-55. doi:10.1016/j.jpsychores.2004.06.005

Garcia-Esteve, L., Ascaso, C., Ojuel, J., & Navarro, P. (2003). Validation of the Edinburgh Postnatal Depression Scale (EPDS) in Spanish mothers. *J Affect Disord, 75*(1), 71-76.

García-Nieto, R., Blasco-Fontecilla, H., Paz Yepes, M., & Baca-García, E. (2013). Translation and validation of the "Self-injurious thoughts and behaviors interview" in a Spanish population with suicidal behaviour. *Rev Psiquiatr Salud Ment, 6*(3), 101-108. doi:10.1016/j.rpsm.2012.07.001

Gaynes, B. N., DeVeaugh-Geiss, J., Weir, S., Gu, H., MacPherson, C., Schulberg, H. C., . . . Rubinow, D. R. (2010). Feasibility and diagnostic validity of the M-3 checklist: a brief, self-rated screen for depressive, bipolar, anxiety, and post-traumatic stress disorders in primary care. *Ann Fam Med, 8*(2), 160-169. doi:10.1370/afm.1092

Giraldo Osorio, A., & Vélez Álvarez, C. (2013). [Primary health care: challenges for implementation in Latin America]. *Aten Primaria, 45*(7), 384-392. doi:10.1016/j.aprim.2012.12.016

Girón, S. (2015). Primary health care: a necessary, current and profitable investment. *Colomb Med (Cali), 46*(3), 88-89.

Goldberg, D. P., & Lecrubier, Y. (1995). Form and frequency of mental disorders across centres. *Mental illness in general health care: an international study. Chichester: John Wiley & Sons*, 323-34.

Goldberg, D. P., Prisciandaro, J. J., & Williams, P. (2012). The primary health care version of ICD-11: the detection of common mental disorders in general medical settings. *Gen Hosp Psychiatry, 34*(6), 665-670. doi:10.1016/j.genhosppsych.2012.06.006

Gomez-Restrepo, C., Escudero, C., Matallana, D., González, L., & Rodriguez, V. (2015). *Encuesta Nacional de Salud Mental, 2015* (M. d. Salud Ed. Vol. 1).

Goncalves, D. A., Fortes, S., Campos, M., Ballester, D., Portugal, F. B., Tofoli, L. F., . . . Bower, P. (2013). Evaluation of a mental health training intervention for

multidisciplinary teams in primary care in Brazil: a pre- and posttest study. *Gen Hosp Psychiatry, 35*(3), 304-308. doi:10.1016/j.genhosppsych.2013.01.003

Goodwin, R. D., Hottinger, K., Pena, L., Chacko, A., Feldman, J., Wamboldt, M. Z., & Hoven, C. (2014). Asthma and mental health among youth in high-risk service settings. *J Asthma, 51*(6), 639-644. doi:10.3109/02770903.2014.897728

Goodyear-Smith, F., Coupe, N. M., Arroll, B., Elley, C. R., Sullivan, S., & McGill, A. T. (2008). Case finding of lifestyle and mental health disorders in primary care: validation of the 'CHAT' tool. *Br J Gen Pract, 58*(546), 26-31. doi:10.3399/bjgp08X263785

Gupta, M. A., & Gupta, A. K. (2003). Psychiatric and psychological co-morbidity in patients with dermatologic disorders: epidemiology and management. *Am J Clin Dermatol, 4*(12), 833-842.

Gureje, O., Abdulmalik, J., Kola, L., Musa, E., Yasamy, M. T., & Adebayo, K. (2015). Integrating mental health into primary care in Nigeria: report of a demonstration project using the mental health gap action programme intervention guide. *BMC Health Serv Res, 15*, 242. doi:10.1186/s12913-015-0911-3

Guyatt G., Patrick D. Evaluation of translation and cultural adaptation in global clinical trials included in Cochrane reviews. XV Cochrane Colloquium. Oct 23-27. 2007. Sao Paulo Brazil.

Hatou, K. (2014). [Mental Health Atlas 2011 (WHO)]. *Seishin Shinkeigaku Zasshi, 116*(4), 267.

He, H., Zhou, Y., Sun, B., Guo, Y., & Rosenheck, R. A. (2015). Brief Chinese version of the Family Experience Interview Schedule to assess caregiver burden of family members of individuals with mental disorders. *Shanghai Arch Psychiatry, 27*(1), 55-61. doi:10.11919/j.issn.1002-0829.214138

Head, J., Stansfeld, S. A., Ebmeier, K. P., Geddes, J. R., Allan, C. L., Lewis, G., & Kivimäki, M. (2013). Use of self-administered instruments to assess psychiatric disorders in older people: validity of the General Health Questionnaire, the Center for Epidemiologic Studies Depression Scale and the self-completion version of the revised Clinical Interview Schedule. *Psychol Med, 43*(12), 2649-2656. doi:10.1017/S0033291713000342

Heath, O., Church, E., Curran, V., Hollett, A., Cornish, P., Callanan, T., . . . Younghusband, L. (2015). Interprofessional mental health training in rural primary care: findings from a mixed methods study. *J Interprof Care, 29*(3), 195-201. doi:10.3109/13561820.2014.966808

Henrique-Araújo, R., Osório, F. L., Gonçalves Ribeiro, M., Soares Monteiro, I., Williams, J. B., Kalali, A., . . . Oliveira, I. R. (2014). Transcultural Adaptation of GRID Hamilton

Rating Scale For Depression (GRID-HAMD) to Brazilian Portuguese and Evaluation of the Impact of Training Upon Inter-Rater Reliability. *Innov Clin Neurosci, 11*(7-8), 10-18.

Hernández, G., Ibáñez, C., Kimelman, M., Orellana, G., Montino, O., & Núñez, C. (2001). Prevalencia de trastornos siquiátricos en hombres y mujeres hospitalizados en un Servicio de MedicinaInterna de un hospital de Santiago de Chile. *Rev.Med.Chile, 129*(11).

Herrero, M. J., Blanch, J., Peri, J. M., De Pablo, J., Pintor, L., & Bulbena, A. (2003). A validation study of the hospital anxiety and depression scale (HADS) in a Spanish population. *Gen Hosp Psychiatry, 25*(4), 277-283.

Hervada, X., Santiago, M. I., Vásquez, E., Castillo, C., Loyola, E., & Silva, L. C. (2014). Programa para análisis epidemiológico de datos tabulados EPIDAT (computer program).

Hill, L. S., Reid, F., Morgan, J. F., & Lacey, J. H. (2010). SCOFF, the development of an eating disorder screening questionnaire. *Int J Eat Disord, 43*(4), 344-351. doi:10.1002/eat.20679

Hilty, D. M., Marks, S. L., Urness, D., Yellowlees, P. M., & Nesbitt, T. S. (2004). Clinical and educational telepsychiatry applications: a review. *Can J Psychiatry, 49*(1), 12-23.

Hiranyatheb, T., Saipanish, R., & Lotrakul, M. (2014). Reliability and validity of the Thai version of the Yale-Brown Obsessive Compulsive Scale - Second Edition in clinical samples. *Neuropsychiatr Dis Treat, 10*, 471-477. doi:10.2147/NDT.S56971

Hodgins, G., Judd, F., Davis, J., & Fahey, A. (2007). An integrated approach to general practice mental health training: the importance of context. *Australas Psychiatry, 15*(1), 52-57. doi:10.1080/10398560601083019

Houston, J. P., Kroenke, K., Faries, D. E., Doebbeling, C. C., Adler, L. A., Ahl, J., . . . Trzepacz, P. T. (2011). A provisional screening instrument for four common mental disorders in adult primary care patients. *Psychosomatics, 52*(1), 48-55. doi:10.1016/j.psym.2010.11.011

Humeniuk, R., Ali, R., Babor, T., Souza-Formigoni, M. L., de Lacerda, R. B., Ling, W., . . . Vendetti, J. (2012). A randomized controlled trial of a brief intervention for illicit drugs linked to the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) in clients recruited from primary health-care settings in four countries. *Addiction, 107*(5), 957-966. doi:10.1111/j.1360-0443.2011.03740.x

Härter, M., Baumeister, H., Reuter, K., Jacobi, F., Höfler, M., Bengel, J., & Wittchen, H. U. (2007). Increased 12-month prevalence rates of mental disorders in patients with chronic somatic diseases. *Psychother Psychosom, 76*(6), 354-360. doi:10.1159/000107563

Härter, M. C., Conway, K. P., & Merikangas, K. R. (2003). Associations between anxiety disorders and physical illness. *Eur Arch Psychiatry Clin Neurosci, 253*(6), 313-320. doi:10.1007/s00406-003-0449-y

Ishikawa, H., Kawakami, N., Kessler, R. C., & Collaborators, W. M. H. J. S. (2016). Lifetime and 12-month prevalence, severity and unmet need for treatment of common mental disorders in Japan: results from the final dataset of World Mental Health Japan Survey. *Epidemiol Psychiatr Sci, 25*(3), 217-229. doi:10.1017/S2045796015000566

Jager, M., Sobocki, P., & Rossler, W. (2008). Cost of disorders of the brain in Switzerland with a focus on mental disorders. *Swiss Med Wkly, 138*(1-2), 4-11. doi:2008/01/smw-11910

Jaramillo-Vélez, D. E., Ospina-Muñoz, D., Cabarcas-Iglesias, G., & Humphreys, J. (2005). Resiliencia, espiritualidad, aflicción y tácticas de resolución de conflictos en mujeres maltratadas. *Rev Salud Publica, 7*, 281-292.

Jenkins, R., Kiima, D., Njenga, F., Okonji, M., Kingora, J., Kathuku, D., & Lock, S. (2010). Integration of mental health into primary care in Kenya. *World Psychiatry, 9*(2), 118-120.

Karekla, M., Pilipenko, N., & Feldman, J. (2012). Patient Health Questionnaire: Greek language validation and subscale factor structure. *Compr Psychiatry, 53*(8), 1217-1226. doi:10.1016/j.comppsych.2012.05.008

Kassam-Adams, N., Gold, J. I., Montaño, Z., Kohser, K. L., Cuadra, A., Muñoz, C., & Armstrong, F. D. (2013). Development and psychometric evaluation of child acute stress measures in Spanish and English. *J Trauma Stress, 26*(1), 19-27. doi:10.1002/jts.21782

Kathol, R. G., & Clarke, D. (2005). Rethinking the place of the psyche in health: toward the integration of health care systems. *Aust N Z J Psychiatry, 39*(9), 816-825. doi:10.1111/j.1440-1614.2005.01687.x

Kauye, F., Jenkins, R., & Rahman, A. (2014). Training primary health care workers in mental health and its impact on diagnoses of common mental disorders in primary care of a developing country, Malawi: a cluster-randomized controlled trial. *Psychol Med, 44*(3), 657-666. doi:10.1017/S0033291713001141

Kayhan, F., Cıcek, E., Uguz, F., Karababa, I. F., & Kucur, R. (2013). Mood and anxiety disorders among inpatients of a university hospital in Turkey. *Gen Hosp Psychiatry, 35*(4), 417-422. doi:10.1016/j.genhosppsych.2013.03.004

Kessler, R. C., Angermeyer, M., Anthony, J. C., R, D. E. G., Demyttenaere, K., Gasquet, I., . . . Ustun, T. B. (2007). Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey Initiative. *World Psychiatry, 6*(3), 168-176.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry, 62*(6), 593-602. doi:10.1001/archpsyc.62.6.593

Kessler, R. C., Calabrese, J. R., Farley, P. A., Gruber, M. J., Jewell, M. A., Katon, W., . . . Wittchen, H. U. (2013). Composite International Diagnostic Interview screening scales for DSM-IV anxiety and mood disorders. *Psychol Med, 43*(8), 1625-1637. doi:10.1017/S0033291712002334

Khalid, A., Kunwar, A. R., Rajbhandari, K. C., Sharma, V. D., & Regmi, S. K. (2000). A study of prevalence and comorbidity of depression in alcohol dependence. *Indian J Psychiatry, 42*(4), 434-438.

Kirigia, J. M., & Sambo, L. G. (2003). Cost of mental and behavioural disorders in Kenya. *Ann Gen Hosp Psychiatry, 2*(1), 7. doi:10.1186/1475-2832-2-7

Kirkcaldy, R. D., & Tynes, L. L. (2006). Depression screening in a VA primary care clinic. *Psychiatr Serv, 57*(12), 1694-1696. doi:10.1176/appi.ps.57.12.1694

Kohn, R., Levav, I., Caldas de Almeida, J. M., Vicente, B., Andrade, L., Caraveo-Anduaga, J. J., . . . Saraceno, B. (2005). Los trastornos mentales en América Latina y el Caribe: asunto prioritario para la salud pública. *Rev Panam Salud Publica, 18*(4/5), 229-240.

Kohn, R., Saxena, S., Levav, I., & Saraceno, B. (2004). The treatment gap in mental health care. *Bull World Health Organ, 82*(11), 858-866. doi:/S0042-96862004001100011

Kozubal, D. E., Samus, Q. M., Bakare, A. A., Trecker, C. C., Wong, H. W., Guo, H., . . . Kaplin, A. I. (2013). Separate may not be equal: a preliminary investigation of clinical correlates of electronic psychiatric record accessibility in academic medical centers. *Int J Med Inform, 82*(4), 260-267. doi:10.1016/j.ijmedinf.2012.11.007

Krishna, M., Lepping, P., Sharma, V. K., Copeland, J. R., Lockwood, L., & Williams, M. (2009). Epidemiological and clinical use of GMHAT-PC (Global Mental Health assessment tool - primary care) in cardiac patients. *Clin Pract Epidemiol Ment Health, 5*, 7. doi:10.1186/1745-0179-5-7

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med, 16*(9), 606-613.

Ladera V, P. M. (2012). Rastreo Cognitivo en Demencia. *Revista Neuropsicología, Neuropsiquiatría y Neurociencias, 12*(1), 22.

Leigh, H., Stewart, D., & Mallios, R. (2006). Mental health and psychiatry training in primary care residency programs. Part II. What skills and diagnoses are taught, how adequate, and what affects training directors' satisfaction? *Gen Hosp Psychiatry, 28*(3), 195-204. doi:10.1016/j.genhosppsych.2005.10.004

Leitão, R. J., Ferraz, M. B., Chaves, A. C., & Mari, J. J. (2006). Cost of schizophrenia: direct costs and use of resources in the State of São Paulo. *Revista de saúde pública, 40*(2), 304-309.

Lobo, A., Chamorro, L., Luque, A., Dal-Ré, R., Badia, X., Baró, E., & (GVEEP), G. d. V. e. E. d. E. P. (2002). [Validation of the Spanish versions of the Montgomery-Asberg depression and Hamilton anxiety rating scales]. *Med Clin (Barc), 118*(13), 493-499.

Lobo, A., Pérez-Echeverría, M. J., & Artal, J. (1986). Validity of the scaled version of the General Health Questionnaire (GHQ-28) in a Spanish population. *Psychol Med, 16*(1), 135-140.

Loerch, B., Szegedi, A., Kohnen, R., & Benkert, O. (2000). The primary care evaluation of mental disorders (PRIME-MD), German version: a comparison with the CIDI. *J Psychiatr Res, 34*(3), 211-220.

Londoño, N. H., Muñiz, O., Correa, J. E., Patiño, C. D., Jaramillo, G., Raigoza, J., ... & Rojas, C. (2005). *Salud mental en víctimas de la violencia armada en Bojayá (Chocó, Colombia)*. Red Revista Colombiana de Psiquiatría.

Lorn K., Aaronson N., Alonso J., Burnam M., Patrick D y col. Evaluating Quality of Life and Health Status Instruments: Development of Scientific Review Criteria. Clin Therap 1996; 18(5):979-992.

Lund, C., Myer, L., Stein, D. J., Williams, D. R., & Flisher, A. J. (2013). Mental illness and lost income among adult South Africans. *Soc Psychiatry Psychiatr Epidemiol, 48*(5), 845-851. doi:10.1007/s00127-012-0587-5

Luria, R. E., & McHugh, P. R. (1974). Reliability and clinical utility of the "Wing" Present State examination. *Arch Gen Psychiatry, 30*(6), 866-871.

Maizels, M., Smitherman, T. A., & Penzien, D. B. (2006). A review of screening tools for psychiatric comorbidity in headache patients. *Headache, 46 Suppl 3*, S98-109. doi:10.1111/j.1526-4610.2006.00561.x

Makanjuola, V., Doku, V., Jenkins, R., & Gureje, O. (2012). Impact of a one-week intensive 'training of trainers' workshop for community health workers in south-west Nigeria. *Ment Health Fam Med, 9*(1), 33-38.

Mangalore, R., & Knapp, M. (2007). Cost of schizophrenia in England. *J Ment Health Policy Econ, 10*(1), 23-41.

McGrady, A., Lynch, D. J., Nagel, R. W., & Tamburrino, M. (2010). Coherence between physician diagnosis and patient self reports of anxiety and depression in primary care. *J Nerv Ment Dis, 198*(6), 420-424. doi:10.1097/NMD.0b013e3181e084ce

Medina-Mora, M. E., Borges, G., Benjet, C., Lara, C., Rojas, E., Fleiz, C., . . . Aguilar-Gaxiola, S. (2009). Estudio de los trastornos mentales en México: resultados de la Encuesta Mundial de Salud Mental. *Epidemiología de los trastornos mentales en América Latina y el Caribe. Washington, DC: PAHO*, 79-89.

Mendenhall, E., De Silva, M. J., Hanlon, C., Petersen, I., Shidhaye, R., Jordans, M., . . . Lund, C. (2014). Acceptability and feasibility of using non-specialist health workers to deliver mental health care: stakeholder perceptions from the PRIME district sites in Ethiopia, India, Nepal, South Africa, and Uganda. *Soc Sci Med, 118*, 33-42. doi:10.1016/j.socscimed.2014.07.057

Milne, A., Culverwell, A., Guss, R., Tuppen, J., & Whelton, R. (2008). Screening for dementia in primary care: a review of the use, efficacy and quality of measures. *Int Psychogeriatr, 20*(5), 911-926. doi:10.1017/S1041610208007394

Mitchell, A. J., Bird, V., Rizzo, M., & Meader, N. (2010). Diagnostic validity and added value of the Geriatric Depression Scale for depression in primary care: a meta-analysis of GDS30 and GDS15. *J Affect Disord, 125*(1-3), 10-17. doi:10.1016/j.jad.2009.08.019

Mitchell, A. J., Meader, N., Bird, V., & Rizzo, M. (2012). Clinical recognition and recording of alcohol disorders by clinicians in primary and secondary care: meta-analysis. *Br J Psychiatry, 201*, 93-100. doi:10.1192/bjp.bp.110.091199

Mogollón, J., Jinete, S., Moreno, I., & Álvarez, M. (2005). Prevalencia de trastorno depresivo mayor en pacientes mayores de 50 años hospitalizados en un servicio de medicina interna. *MedUNAB, 8*(1), 4.

Muntingh, A. D., van der Feltz-Cornelis, C. M., van Marwijk, H. W., Spinhoven, P., Penninx, B. W., & van Balkom, A. J. (2011). Is the Beck Anxiety Inventory a good tool to assess the severity of anxiety? A primary care study in the Netherlands Study of Depression and Anxiety (NESDA). *BMC Fam Pract, 12*, 66. doi:10.1186/1471-2296-12-66

Munhoz, T. N., Nunes, B. P., Wehrmeister, F. C., Santos, I. S., & Matijasevich, A. (2016). A nationwide population-based study of depression in Brazil. Journal of affective disorders, 192, 226-233.

Möller-Leimkühler, A. M., & Wiesheu, A. (2012). Caregiver burden in chronic mental illness: the role of patient and caregiver characteristics. *Eur Arch Psychiatry Clin Neurosci, 262*(2), 157-166. doi:10.1007/s00406-011-0215-5

Navarro-Mateu, F., Morán-Sánchez, I., Alonso, J., Tormo, M. J., Pujalte, M. L., Garriga, A., . . . Navarro, C. (2013). Cultural adaptation of the Latin American version of the World Health Organization Composite International Diagnostic Interview (WHO-CIDI) (v 3.0) for use in Spain. *Gac Sanit, 27*(4), 325-331. doi:10.1016/j.gaceta.2012.06.005

Olesen, J., Gustavsson, A., Svensson, M., Wittchen, H. U., & Jonsson, B. (2012). The economic cost of brain disorders in Europe. *Eur J Neurol, 19*(1), 155-162. doi:10.1111/j.1468-1331.2011.03590.x

Orive, M., Padierna, J. A., Quintana, J. M., Las-Hayas, C., Vrotsou, K., & Aguirre, U. (2010). Detecting depression in medically ill patients: Comparative accuracy of four screening questionnaires and physicians' diagnoses in Spanish population. *J Psychosom Res, 69*(4), 399-406. doi:10.1016/j.jpsychores.2010.04.007

Oslin, D. W., Ross, J., Sayers, S., Murphy, J., Kane, V., & Katz, I. R. (2006). Screening, assessment, and management of depression in VA primary care clinics. The Behavioral Health Laboratory. *J Gen Intern Med, 21*(1), 46-50. doi:10.1111/j.1525-1497.2005.0267.x

Park, M. H., Lee, D. H., Lee, H. J., & Song, M. S. (2005). The PHC-cog: a brief cognitive function screening test for the elderly. *Neurol India, 53*(1), 60-64; discussion 65.

Parés-Badell, O., Barbaglia, G., Jerinic, P., Gustavsson, A., Salvador-Carulla, L., & Alonso, J. (2014). Cost of disorders of the brain in Spain. *PLoS One, 9*(8), e105471. doi:10.1371/journal.pone.0105471

Patel, V., & Kleinman, A. (2003). Poverty and common mental disorders in developing countries. *Bull World Health Organ, 81*(8), 609-615.

Peñaloza, R. E., Salamanca, N., Rodríguez, J. M., Rodríguez, J., & Beltrán, A. R. (2014). Estimación de la carga de enfermedad para Colombia, 2010. *Bogotá, Colombia: Javeriana University*.

Pérez-Olmos, I., Fernández-Piñeres, P. E., & Rodado-Fuentes, S. (2005). Prevalencia del trastorno por estrés postraumático por la guerra, en niños de Cundinamarca, Colombia. *Revista de salud pública*, *7*(3), 268-280.

Petersen, I., Evans-Lacko, S., Semrau, M., Barry, M. M., Chisholm, D., Gronholm, P., . . . Thornicroft, G. (2016). Promotion, prevention and protection: interventions at the population- and community-levels for mental, neurological and substance use disorders in low- and middle-income countries. *Int J Ment Health Syst, 10*, 30. doi:10.1186/s13033-016-0060-z

Petersen, I., Fairall, L., Bhana, A., Kathree, T., Selohilwe, O., Brooke-Sumner, C., . . . Patel, V. (2016). Integrating mental health into chronic care in South Africa: the development of a district mental healthcare plan. *Br J Psychiatry, 208 Suppl 56*, s29-39. doi:10.1192/bjp.bp.114.153726

Pirani, A., Brodaty, H., Martini, E., Zaccherini, D., Neviani, F., & Neri, M. (2010). The validation of the Italian version of the GPCOG (GPCOG-It): a contribution to cross-national implementation of a screening test for dementia in general practice. *Int Psychogeriatr, 22*(1), 82-90. doi:10.1017/S104161020999113X

Poole, R., & Higgo, R. (2006). *Psychiatric interviewing and assessment*: Cambridge University Press.

Posada-Villa, J. A., Aguilar-Gaxiola, S., Magaña, C. G., & Gómez, L. C. (2004). Prevalencia de trastornos mentales y uso de servicios: resultados preliminares del Estudio Nacional de Salud Mental, Colombia, 2003. *Revista Colombiana de Psiquiatría, 33*(3), 241-262.

Price, M., Yuen, E. K., Goetter, E. M., Herbert, J. D., Forman, E. M., Acierno, R., & Ruggiero, K. J. (2014). mHealth: a mechanism to deliver more accessible, more effective mental health care. *Clin Psychol Psychother, 21*(5), 427-436. doi:10.1002/cpp.1855

Pull, C. B., Saunders, J. B., Mavreas, V., Cottler, L. B., Grant, B. F., Hasin, D. S., . . . Ustun, B. T. (1997). Concordance between ICD-10 alcohol and drug use disorder criteria and diagnoses as measured by the AUDADIS-ADR, CIDI and SCAN: results of a cross-national study. *Drug Alcohol Depend, 47*(3), 207-216.

Quintana, M. I., Andreoli, S. B., Jorge, M. R., Gastal, F. L., & Miranda, C. T. (2004). The reliability of the Brazilian version of the Composite International Diagnostic Interview (CIDI 2.1). *Braz J Med Biol Res, 37*(11), 1739-1745. doi:/S0100-879X2004001100020

Razzouk, D., Zorzetto, R., & Mari, J. (2009). Investigación en salud mental en América Latina. In *Serie PALTEX para ejcutores de programas de salud* (No. 49, pp. 219-227). OPS.

Restrepo, D., Cardeño, C., Páramo, L., Ospina, S., & Calle, J. (2009). Delírium: incidencia y características clínicas y epidemiológicas en un hospital universitario. *Revista Colombiana de Psiquiatría, 38*(3).

Reuland, D. S., Cherrington, A., Watkins, G. S., Bradford, D. W., Blanco, R. A., & Gaynes, B. N. (2009). Diagnostic accuracy of Spanish language depression-screening instruments. *Ann Fam Med, 7*(5), 455-462. doi:10.1370/afm.981

Ribeiro, W. S., Mari Jde, J., Quintana, M. I., Dewey, M. E., Evans-Lacko, S., Vilete, L. M., . . . Andreoli, S. B. (2013). The impact of epidemic violence on the prevalence of psychiatric disorders in Sao Paulo and Rio de Janeiro, Brazil. *PLoS One, 8*(5), e63545. doi:10.1371/journal.pone.0063545

Rickels, M. R., Khalid-Khan, S., Gallop, R., & Rickels, K. (2009). Assessment of anxiety and depression in primary care: value of a four-item questionnaire. *J Am Osteopath Assoc, 109*(4), 216-219.

Romera, I., Delgado-Cohen, H., Perez, T., Caballero, L., & Gilaberte, I. (2008). Factor analysis of the Zung self-rating depression scale in a large sample of patients with

major depressive disorder in primary care. *BMC Psychiatry, 8*, 4. doi:10.1186/1471-244X-8-4

Royal College of Nursing, & RCN. (2009). Research ethics: RCN guidance for nurses (3rd. ed.). London: Royal College of Nursing.

Rubio Valldolid, G., Martínez-Raga, J., Martínez-Gras, I., Ponce Alfaro, G., de la Cruz Bértolo, J., Jurado Barba, R., . . . Zarco Montejo, J. (2014). Validation of the Spanish version of the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST). *Psicothema, 26*(2), 180-185. doi:10.7334/psicothema2013.172

Rugema, L., Krantz, G., Mogren, I., Ntaganira, J., & Persson, M. (2015). "A constant struggle to receive mental health care": health care professionals' acquired experience of barriers to mental health care services in Rwanda. *BMC Psychiatry, 15*, 314. doi:10.1186/s12888-015-0699-z

Ruiz-Grosso, P., Loret de Mola, C., Vega-Dienstmaier, J. M., Arevalo, J. M., Chavez, K., Vilela, A., . . . Huapaya, J. (2012). Validation of the Spanish Center for Epidemiological Studies Depression and Zung Self-Rating Depression Scales: a comparative validation study. *PLoS One, 7*(10), e45413. doi:10.1371/journal.pone.0045413

Saarni, S. I., Suvisaari, J., Sintonen, H., Pirkola, S., Koskinen, S., Aromaa, A., & Lönnqvist, J. (2007). Impact of psychiatric disorders on health-related quality of life: general population survey. *The British journal of psychiatry, 190*(4), 326-332.

Salvador-Carulla, L., Bendeck, M., Fernandez, A., Alberti, C., Sabes-Figuera, R., Molina, C., & Knapp, M. (2011). Costs of depression in Catalonia (Spain). *J Affect Disord, 132*(1-2), 130-138. doi:10.1016/j.jad.2011.02.019

Samet, S., Waxman, R., Hatzenbuehler, M., & Hasin, D. S. (2007). Assessing addiction: Concepts and instruments. *Addiction science & clinical practice, 4*(1), 19-31.

Sanchez, R., & Echeverry, J. (2004). [Validating scales used for measuring factors in medicine]. *Rev Salud Publica (Bogota), 6*(3), 302-318.

Sánchez Pedraza, R., & Gómez Restrepo, C. (1998). Conceptos básicos sobre validación de escalas; Basic concepts on validation. *Rev. colomb. psiquiatr, 27*(2), 121-130.

Sartorius, N., Ustün, T. B., Lecrubier, Y., & Wittchen, H. U. (1996). Depression comorbid with anxiety: results from the WHO study on psychological disorders in primary health care. *Br J Psychiatry Suppl*(30), 38-43.

Saunders, J. C. (2003). Families living with severe mental illness: a literature review. *Issues Ment Health Nurs, 24*(2), 175-198.

Schmitz, N., Kruse, J., Heckrath, C., Alberti, L., & Tress, W. (1999). Diagnosing mental disorders in primary care: the General Health Questionnaire (GHQ) and the Symptom Check List (SCL-90-R) as screening instruments. *Soc Psychiatry Psychiatr Epidemiol, 34*(7), 360-366.

Schwartzmann, L., Caporale, B., Suárez, A., & Sancristóbal, S. (2003). Incidencia de trastornos psíquicos en pacientes con enfermedades médicas: ¿qué hacer? *Revista de Psiquiatría del Uruguay, 67*(1).

Sharma, B. B., Singh, S., Sharma, V. K., Choudhary, M., Singh, V., Lane, S., . . . Copeland, J. (2013). Psychiatric morbidity in chronic respiratory disorders in an Indian service using GMHAT/PC. *Gen Hosp Psychiatry, 35*(1), 39-44. doi:10.1016/j.genhosppsych.2012.09.009

Sharma, N., Chakrabarti, S., & Grover, S. (2016). Gender differences in caregiving among family - caregivers of people with mental illnesses. *World J Psychiatry, 6*(1), 7-17. doi:10.5498/wjp.v6.i1.7

Sharma VK, C. J., Krishna M, Lepping P, Bowen M. (2013). Use of the Global Mental Health Assessment Tool (GMHAT/PC) in general health care setting. *In press*.

Sharma, V. K., & Copeland, J. R. (2009). Detecting mental disorders in primary care. *Ment Health Fam Med, 6*(1), 11-13.

Sharma VK, D. S., Sawa M, Copeland JR, Abou-Saleh M, Lane S. (2013). Arabic version of the Global Mental health Assesment Tool (GMHAT/PC): A validity and feasibility study. *In press*.

Sharma, V. K., Jagawat, S., Midha, A., Jain, A., Tambi, A., Mangwani, L. K., . . . Pangaria, A. (2010). The Global Mental Health Assessment Tool-validation in Hindi: A validity and feasibility study. *Indian J Psychiatry, 52*(4), 316-319. doi:10.4103/0019-5545.74305

Sharma, V. K., Krishna, M., Lepping, P., Palanisamy, V., Kallumpuram, S. V., Mottram, P., . . . Copeland, J. R. (2010). Validation and feasibility of the Global Mental Health Assessment Tool--Primary Care Version (GMHAT/PC) in older adults. *Age Ageing, 39*(4), 496-499. doi:10.1093/ageing/afq050

Sharma, V. K., Lepping, P., Cummins, A. G., Copeland, J. R., Parhee, R., & Mottram, P. (2004). The Global Mental Health Assessment Tool--Primary Care Version (GMHAT/PC). Development, reliability and validity. *World Psychiatry, 3*(2), 115-119.

Sharma, V. K., Lepping, P., Krishna, M., Durrani, S., Copeland, J. R., Mottram, P., . . . Cummins, A. (2008). Mental health diagnosis by nurses using the Global Mental Health Assessment Tool: a validity and feasibility study. *Br J Gen Pract, 58*(551), 411-416. doi:10.3399/bjgp08X299218

Sinisterra, M., Figueroa, F., Moreno, V., Robayo, M., & Sanguino, J. (2010). Prevalencia del trastorno de estrés postraumático en población en situación de desplazamiento en la localidad de Ciudad Bolívar Bogotá, Colombia 2007. *Psychologia, 4*(2), 83-97.

Singer, S., Das-Munshi, J., & Brähler, E. (2010). Prevalence of mental health conditions in cancer patients in acute care--a meta-analysis. *Ann Oncol, 21*(5), 925-930. doi:10.1093/annonc/mdp515

Smith, P. C., Schmidt, S. M., Allensworth-Davies, D., & Saitz, R. (2009). Primary care validation of a single-question alcohol screening test. *J Gen Intern Med, 24*(7), 783-788. doi:10.1007/s11606-009-0928-6

Snyderman, D., & Rovner, B. (2009). Mental status exam in primary care: a review. *Am Fam Physician, 80*(8), 809-814.

Sorsdahl, K., Vythilingum, B., & Stein, D. J. (2012). A screening tool for social anxiety disorder in primary care: data from South Africa. *J Nerv Ment Dis, 200*(2), 163-166. doi:10.1097/NMD.0b013e3182439732

Southard, E. P., Neufeld, J. D., & Laws, S. (2014). Telemental health evaluations enhance access and efficiency in a critical access hospital emergency department. *Telemed J E Health, 20*(7), 664-668. doi:10.1089/tmj.2013.0257

Spitzer, R. L., Kroenke, K., & Williams, J. B. (1999). Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. Primary Care Evaluation of Mental Disorders. Patient Health Questionnaire. *JAMA, 282*(18), 1737-1744.

Staab, J. P., & Evans, D. L. (2001). A streamlined method for diagnosing common psychiatric disorders in primary care. *Clin Cornerstone, 3*(3), 1-9.

Subramaniam, M., Abdin, E., Vaingankar, J. A., Nan, L., Heng, D., McCrone, P., & Chong, S. A. (2013). Impact of psychiatric disorders and chronic physical conditions on health-related quality of life: Singapore Mental Health Study. *J Affect Disord, 147*(1-3), 325-330. doi:10.1016/j.jad.2012.11.033

Sweetland, A. C., Oquendo, M. A., Sidat, M., Santos, P. F., Vermund, S. H., Duarte, C. S., . . . Wainberg, M. L. (2014). Closing the mental health gap in low-income settings by building research capacity: perspectives from Mozambique. *Ann Glob Health, 80*(2), 126-133. doi:10.1016/j.aogh.2014.04.014

Terwee C., Bot S., de Boer M., van der Windt D., Knol D y col. Quality criteria were proposed for measurement properties of health status questionnaires. J Clin Epidemiol 2007; 60:34-42.

Thara, R., & Sujit, J. (2013). Mobile telepsychiatry in India. *World Psychiatry, 12*(1), 84. doi:10.1002/wps.20025

Thomas, D., Macdowell, M., & Glasser, M. (2012). Rural mental health workforce needs assessment - a national survey. *Rural Remote Health, 12*, 2176.

Thornicroft, G., Tansella, M., Becker, T., Knapp, M., Leese, M., Schene, A., & Vazquez-Barquero, J. L. (2004). The personal impact of schizophrenia in Europe. *Schizophr Res, 69*(2-3), 125-132.

Tomaras, V. D., Ginieri-Coccossis, M., Vassiliadou, M., Malliori, M., Ferentinos, S., Soldatos, C. R., & Tylee, A. (2011). Education in mental health promotion and its impact on the participants' attitudes and perceived mental health. *Ann Gen Psychiatry, 10*, 33. doi:10.1186/1744-859X-10-33

Unützer, J., Schoenbaum, M., Druss, B. G., & Katon, W. J. (2006). Transforming mental health care at the interface with general medicine: report for the presidents commission. *Psychiatr Serv, 57*(1), 37-47. doi:10.1176/appi.ps.57.1.37

Vargas, B., Villamil, V., Rodríguez, C., Pérez, J., & Cortés, J. (2011). Validación de la escala de Kessler 10 (K 10) en la detección de depresión y ansiedad en el primer nivel de atención. Propiedades psicométricas. *Salud Mental, 34*, 9.

Vargas, I., Mogollón-Pérez, A. S., De Paepe, P., da Silva, M. R., Unger, J. P., & Vázquez, M. L. (2015). Do existing mechanisms contribute to improvements in care coordination across levels of care in health services networks? Opinions of the health personnel in Colombia and Brazil. *BMC Health Serv Res, 15*, 213. doi:10.1186/s12913-015-0882-4

Vargas, T., Villamil, S., Rodríguez, E., Pérez, R., & Cortés, S. (2011). Validación de la escala Kessler 10 (K-10) en la detección de depresión y ansiedad en el primer nivel de atención. Propiedades psicométricas.

Vázquez, M. L., Vargas, I., Unger, J. P., De Paepe, P., Mogollón-Pérez, A. S., Samico, I., . . . Bertolotto, F. (2015). Evaluating the effectiveness of care integration strategies in different healthcare systems in Latin America: the EQUITY-LA II quasi-experimental study protocol. *BMJ Open, 5*(7), e007037. doi:10.1136/bmjopen-2014-007037

Ventevogel, P. (2014). Integration of mental health into primary healthcare in low-income countries: avoiding medicalization. *Int Rev Psychiatry, 26*(6), 669-679. doi:10.3109/09540261.2014.966067

Ventevogel, P., De Vries, G., Scholte, W. F., Shinwari, N. R., Faiz, H., Nassery, R., . . . Olff, M. (2007). Properties of the Hopkins Symptom Checklist-25 (HSCL-25) and the Self-Reporting Questionnaire (SRQ-20) as screening instruments used in primary care in Afghanistan. *Soc Psychiatry Psychiatr Epidemiol, 42*(4), 328-335. doi:10.1007/s00127-007-0161-8

Vicente, B., Kohn, R., Saldivia, S., & Rioseco, P. (2009). Las contribuciones de Chile a la investigación en epidemiología psiquiátrica. *Epidemiología de los trastornos mentales*

en América Latina y el Caribe.(JJ Rodríguez, R. Kohn, S. Aguilar, Eds.) Washington, DC: Organización Panamericana de la Salud, 118-131.

Viera, A. J., & Garrett, J. M. (2005). Understanding interobserver agreement: the kappa statistic. *Fam Med, 37*(5), 360-363.

Wang, K. S., Liu, X., & Wang, L. (2014). Associations of alcohol consumption and mental health with the prevalence of arthritis among US adults: data from the 2012 National Health Interview Survey. *Rheumatol Int, 34*(9), 1241-1249. doi:10.1007/s00296-014-2992-4

WHO. (2008). mhGAP: Mental Health Gap Action Programme: scaling up care for mental, neurological and substance use disorders. *Geneva: World Health Organization*.

Wig, N. N., Menon, D. K., & Srinivasamurthy, R. (1982). Hindi version of present state examination : problems of translation and application in Indian setting. *Indian J Psychiatry, 24*(4), 309-317.

Wild D, Grove M, Martin M, Eremenco S, McElroy S. Principles of Good Practice for the Translation and Cultural Adaptation Process for Patient-Reported Outcomes(PRO) Measures: Report of the ISPOR Task Force for Translation and Cultural Adaptation. Value in Health 2005; 8: 95-105.

Wing, J. K., Cooper, J. E., & Sartorius, N. (2012). *Measurement and Classification of Psychiatric Symptoms: An Instruction Manual for the PSE and Catego Program*: Cambridge University Press.

Wittkampf, K., van Ravesteijn, H., Baas, K., van de Hoogen, H., Schene, A., Bindels, P., . . . van Weert, H. (2009). The accuracy of Patient Health Questionnaire-9 in detecting depression and measuring depression severity in high-risk groups in primary care. *Gen Hosp Psychiatry, 31*(5), 451-459. doi:10.1016/j.genhosppsych.2009.06.001

Wong, D. F., Lam, A. Y., Chan, S. K., & Chan, S. F. (2012). Quality of life of caregivers with relatives suffering from mental illness in Hong Kong: roles of caregiver characteristics, caregiving burdens, and satisfaction with psychiatric services. *Health Qual Life Outcomes, 10*, 15. doi:10.1186/1477-7525-10-15

Wulsin, L., Somoza, E., & Heck, J. (2002). The Feasibility of Using the Spanish PHQ-9 to Screen for Depression in Primary Care in Honduras. *Prim Care Companion J Clin Psychiatry, 4*(5), 191-195.

Xu, J., Wang, J., Wimo, A., & Qiu, C. (2016). The economic burden of mental disorders in China, 2005-2013: implications for health policy. *BMC Psychiatry, 16*(1), 137. doi:10.1186/s12888-016-0839-0

Yan, Z. Y., Gu, M. J., Zhong, B. L., Wang, C., Tang, H. L., Ling, Y. Q., . . . Li, M. Q. (2013). Prevalence, risk factors and recognition rates of depressive disorders among inpatients

of tertiary general hospitals in Shanghai, China. *J Psychosom Res, 75*(1), 65-71. doi:10.1016/j.jpsychores.2013.03.003

Zhong, B. L., Chen, H. H., Zhang, J. F., Xu, H. M., Zhou, C., Yang, F., . . . Zhou, L. (2010). Prevalence, correlates and recognition of depression among inpatients of general hospitals in Wuhan, China. *Gen Hosp Psychiatry, 32*(3), 268-275. doi:10.1016/j.genhosppsych.2010.01.016

Appendix 1 Consent Form (English)

The Global Mental Health Assessment Tool Primary Care and General Health Setting Version (GMHAT/PC) – Spanish version: A validity and feasibility study

CONSENT FORM

Name of Researcher:

Please initial box

1. I confirm that I have read and understood the information sheet dated……for the above study and have had the opportunity to ask questions

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected.

3. I understand that sections of any of my medical notes may be looked at by responsible individuals from regulatory authorities where it is relevant to my taking part in research. I give permission for these individuals to have access to my records.

4. I agree to take part in the above study.

_____ _____ _____

Name of patient Date Signature

_____ _____ _____

Name of persons taking consent Date Signature

_____ _____ _____

Researcher Date Signature

Appendix 2 Consent Form (Spanish)

Validación de la Herramienta para la Evaluación Global de la Salud Mental en Atención Primaria – Versión en Español

Nombre del investigador: Paola A Tejada MD Psiquiatra

1. Confirmo que he leído y entendido la información que me han dado sobre el estudio y he tenido la oportunidad de hacer preguntas ☐
2. Entiendo que mi participación es voluntaria y puedo retirarme en cualquier momento sin que mi tratamiento se vea afectado. ☐
3. Acepto formar parte de este estudio ☐

_____	_____	_____
Nombre	Fecha	Firma
_____	_____	_____
Nombre de la persona que toma el consentimiento	Fecha	Firma
_____	_____	_____
Investigador	Fecha	Firma

Appendix 3 Patient Information Sheet (English)

Patient Information Sheet

The Global Mental Health Assessment Tool Primary Care and General Health Setting Version (GMHAT/PC) – Spanish version: A validity and feasibility study

Purpose of the study

We would like to ask you for your help with a research study. The aim of this study is to see whether a detailed computer assisted tool, the GMHAT (which consists of a series of questions assessing your psychological wellbeing), when used by a GP arrives at the same conclusion (diagnosis) as a psychiatrist. The result of this study will help in confirming the usefulness of this tool in accurate detection (and therefore referral for treatment) of mental health problems in general health care settings by health care professionals other than psychiatrist. In other words we want to test whether GPs can use this useful tool as well as psychiatrists and primary care physicians to help in making a diagnosis.

What will the study involve?

You will be involved in this study for a short assessment. The assessment interview will last only 15 minutes.

During the assessment you will be asked questions to cover all areas of your psychological health by the PG. You can choose not to answer if you find any other question uncomfortable. A specialist doctor in mental health wills immediately afterwards. You will be informed if he/she finds any illness that may benefit from treatment.

Time scale

It is proposed that this research will take place sometime over 1 year.

Why have I been chosen?

This study aims to assess a new computer programme; which will help health care professionals to improve their accuracy at identifying mental health problems. You have been chosen because as a part of your medical review you are entitled to a review of your psychological wellbeing. Your entering the study does not mean that you are suffering from a mental health problem. We hope to involve about 400 people in this study.

What about my consent?

Your consent will be requested when you have had time to think about this study. You will then be asked to sign a consent form. You are free to withdraw consent at any time, without giving any reason, without your medical and legal rights being affected. You will be given a copy of consent form to keep.

What if I am found to have a mental health problem?

If you have symptoms that amount to a disabling mental health problem we shall discuss our opinion of the condition with you following our interview.

What happens after the study finishes?

The assessment will not affect your regular care.

Confidentiality

Your name will not be used in any publication or showed to any unauthorised person. No personal identification information that is collected about you during the research will be stored on a computer. All information that is collected about you during this research will be kept strictly confidential.

Results of the study

Once this study is completed, we will publish the results in a report. We will also publish articles in medical journals to tell others about the study. You will not be identified in any report/publication. You may request a copy of the result from the address below.

Copies of the result will be available from The Principal Investigator Dr Paola Andrea Tejada, Instituto Clínico Quirúrgico del Huila Carrera 13 No 6A 01, Neiva, Huila, Colombia.

Informing your doctor

Your doctor will know you are participating in the study.

Complaints

If you have any complaints in relation to this study, please address your complaints to the Principal Investigator Dr Paola Andrea Tejada Instituto Clínico Quirúrgico del Huila Carrera 13 No 6A 01, Neiva, Huila, Colombia.

Further information

This study is not being sponsored, and the doctor will not be receiving any additional monies for including you in this study.

If you like further information on this study then please contact the Principal Investigator Dr Paola Andrea Tejada Instituto Clínico Quirúrgico del Huila Carrera 13 No 6A 01, Neiva, Huila, Colombia.

Thanks

Thank you for taking part in this study.

NOT TAKING PART IN THIS STUDY OR WITHDRAWING FROM IT WOULD NOT AFFECT YOUR NORMAL CARE IN ANY WAY.

YOU SHOULD KEEP THIS LEAFLET FOR FUTURE REFERENCE.

Appendix 4 Patient Information Sheet (Spanish)

The Global Mental Health Assessment Tool Primary Care and General Health Setting Version (GMHAT/PC) – versión en español: Estudio de validación y factibilidad

Propósito del estudio

Nos gustaría que nos ayudara con su participación en esta investigación. El objetivo de este estudio es determinar si una herramienta asistida por computador, el GMHAT, cuando es usada por un médico general llega al mismo diagnóstico que haría un psiquiatra. Los resultados de este estudio nos ayudarán a confirmar la utilidad de esta herramienta para la detección adecuada de problemas de salud mental por profesionales de la salud que no sean psiquiatras. Dicho de otra manera, nos gustaría probar si un médico general puede utilizar esta herramienta para realizar diagnósticos en servicios de atención primaria en salud.

¿Qué implica este estudio?

A usted se le realizará una breve evaluación. La entrevista durará tan solo 15 minutos.

Durante la evaluación se le realizarán preguntas que cubren todas las áreas de su salud mental. Usted puede decidir no responder una o más preguntas. Usted será también evaluado por un psiquiatra. Usted será informado si se encuentra algún hallazgo durante la entrevista que amerite tratamiento.

Cronograma

Este estudio se llevará a cabo durante 1 año.

¿Por qué fui escogido?

El objetivo de este estudio es evaluar un nuevo programa de computador el cual ayudará a los profesionales de la salud para mejorar su exactitud para identificar problemas mentales. Usted fue escogido para ser evaluado como parte de su consulta psiquiátrica. En este estudio participarán aproximadamente 400 personas más.

¿Debo dar mi consentimiento?

Su consentimiento será requerido para participar en este estudio. Se le pedirá firmar una hoja de consentimiento. Es libre de abandonar el estudio cuando así lo desee sin que sus derechos como paciente se vean afectados. Se le entregará una copia del consentimiento.

¿Qué pasa si tengo un problema de salud mental?

Si usted tiene síntomas sugestivos de un problema mental estos serán discutidos con usted.

¿Qué pasará cuando el estudio termine?

Está evaluación no afectará su tratamiento actual.

Confidencialidad

Su nombre no será usado en ninguna publicación o mostrado a personas no autorizadas. No se le solicitarán datos que correspondan a su información personal más allá de la necesaria para el estudio. Toda la información recolectada durante esta investigación será confidencial.

Resultados del estudio

Cuando se termine el estudio se publicarán los resultados. Estos serán publicados en revistas médicas. Usted no será identificado en ninguna publicación. Usted puede pedir copia de los resultados en la siguiente dirección:

Dra. Paola Andrea Tejada, Instituto Clínico Quirúrgico del Huila Carrera 13 No 6A 01, Neiva, Huila, Colombia.

Su médico sabe que usted está participando en este estudio

Quejas y reclamos

Si usted tiene quejas en relación a este estudio diríjalas a Dra. Paola Andrea Tejada Instituto Clínico Quirúrgico del Huila Carrera 13 No 6A 01, Neiva, Huila, Colombia.

Información adicional

Este estudio no recibe ningún patrocinio y los médicos no reciben ningún dinero adicional por su participación en el estudio.

Gracias por su participación en este estudio

LA NO PARTICIPACIÓN EN ESTE ESTUDIO NO AFECTA EL CUIDADO MÉDICO QUE VIENE RECIBIENDO.

PUEDE GUARDAR ESTA INFORMACIÓN PARA FUTURAS CONSULTAS.

Appendix 5 Ethics approval University of Chester

EMW/bh

15th November 2012

University of Chester

Faculty of Health and Social Care

Paola Tejada
Research Office
Faculty of Health & Social Care
University of Chester
Riverside Campus

Tel 01244 511000
Fax 01244 381090

Dear Paola

Ethical Approval Granted

FH&SC Ethics Number:	RESC1012-365
Course of Study:	N/A
Supervisor:	Prof. V. Sharma, Prof. M. Thomas
Student Number:	N/A

I am pleased to inform you that the Research Ethics Sub Committee of the Faculty of Health and Social Care have approved your project **"The Global Mental Health Assessment Tool Primary Care and General Health Setting Version (GMHAT/PC) – Spanish version: A validity and feasibility study."**

Approval is subject to the above and following conditions:

1. That you provide a brief report for the sub-committee on the completion of your project.
2. That you inform the sub-committee of any substantive changes to the project.

We approve your application to go forward to the next stage of the approval process. If you are applying to IRAS and require a sponsorship letter and insurance documentation please contact Barbara Holliday.

If you have any questions or require any further assistance please contact Barbara Holliday on 01244 511117 or by email b.holliday@chester.ac.uk

Yours sincerely

Professor Elizabeth Mason-Whitehead
Chair, Faculty Research Ethics Sub-Committee

cc Research Knowledge Transfer Office
cc Academic Supervisor

Appendix 6 Ethics approval Colombia

HOSPITAL UNIVERSITARIO
HERNANDO MONCALEANO PERDOMO E.S.E.
NEIVA - HUILA

NUESTRA META ACREDITACIÓN

COMITÉ DE ETICA BIOÉTICA E INVESTIGACIÓN DEL HOSPITAL UNIVERSITARIO HERNANDO MONCALEANO PERDOMO DE NEIVA.

ACTA DE APROBACIÓN.

ACTA DE APROBACIÓN Nº : 004-011

Fecha en que fue sometido a consideración del comité: Mayo 7 del 2013.

Nombre completo del Proyecto: ***"Comorbilidad Psiquiátrica en un Hospital Universitario usando la GMHAT/PC"***

Enmienda Revisada: Ninguna.

Sometido por: Estudiantes de la Universidad Surcolombiana Programa de Medicina. Francy Karina Conde, Jonathan Eisnober Díaz, Jessica Andrade, Mónica Natalia Ruiz, Eduardo Andrés Florez, José Alfredo Lizcano.

El Hospital Universitario Hernando Moncaleano Perdomo constituyó mediante la Resolución Nº 1198 del 29 de Diciembre de 2011 el comité de Ética Bioética e Investigación da cumplimiento a la Resoluciones 8430 de 1993 y 2378 del 2008 y al Decreto 1757 de 1994, actos administrativos expedido por el Ministerio de la Protección Social, lo mismo que para obedecer lo dispuesto por la Declaración Universal sobre Bioética y Derechos Humanos de la UNESCO.

El Comité de Ética Bioética e Investigación Certifica que:

1. Sus miembros revisaron los siguientes documentos del presente proyecto.
   a. (**X**)Resumen del proyecto
   b. ( )Protocolo de Investigación
   c. (**X**)Formato de Consentimiento Informado.
   d. ( ) Protocolo de Evento Adverso.
   e. ()Formato de recolección de datos
   f. ( )Folleto del Investigador (si aplica)
   g. ( )Resultado de evaluación por otros comités (si aplica)

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HOSPITAL UNIVERSITARIO
HERNANDO MONCALEANO PERDOMO E.S.E
NEIVA - HUILA

CREDITACIÓN

2. El comité consideró que el presente estudio: es válido desde el punto de vista ético, la investigación se considera sin riesgo para los personas que participan. La investigación se ajusta a los estándares de buenas prácticas clínicas.
3. El comité considera que las medidas que están siendo tomadas para proteger a los sujetos del estudio son las adecuadas.
4. El comité puede ser convocado a solicitud de algún miembro del comité o de las directivas institucionales para revisar cualquier asunto relacionado con los derechos y el bienestar de los sujetos involucrados en este estudio.

5. El investigador Principal deberá:

   a. Informar cualquier cambio que se proponga introducir en el proyecto, estos cambios no podrán ejecutarse si la aprobación previa del comité de ética bioética e investigación de la Institución excepto cuando sea necesario que comprometa la vida del participante del estudio.
   b. Avisar cualquier situación imprevista que considere que implica riesgo para los sujetos o la comunidad o el medio en el cual se lleva a cabo el estudio.
   c. Poner en conocimiento al Comité de toda información nueva, importante respecto al estudio, que pueda afectar la relación riesgo / beneficio de los sujetos participantes.
   d. Informar de la terminación prematura o suspensión del proyecto explicando las causas o razones.
   e. El investigador se compromete una vez terminado su proyecto en hacer una retroalimentación en el servicio donde realizo la investigación para presentar los resultados del estudio.
   f. El informe final de la investigación se debe hacer entrega al comité en un plazo máximo de un mes después de terminada la investigación.
   g. Si el tiempo para el desarrollo del proyecto es mas de un año debe presentar un informe anual del proyecto.
   h. El Investigador se comprometen con hacer entrega al Hospital Universitario de Neiva de un articulo publicado en una revista indexada de la investigación realizada.

Dra. ANGELA MARIA SALCEDO RESTREPO
Presidente Comité de Ética Bioética e Investigación.

Appendix 7 Ethics approval Colombia (English)

ETHICS, BIOETHICS AND RESEARCH COMMITTEE FROM NEIVA'S UNIVERSITY HOSPITAL: HERNANDO MONCALEANO.

APPROVAL CERTIFICATE

APPROVAL CERTIFICATE No: 004-011

Submission date for consideration of the Committee: May 7, 2013

Full Name of the Project: ***"Psychiatric Comorbidity in a University Hospital using GMHAT / PC"***

Revised amendment: None

University Hospital: Hernando Moncaleano Perdomo established the Ethics, Bioethics and Research Committee under the Resolution No. 1198 of 29 December 2011 in compliance with Resolutions 8430 and 2378 from 1993 and 2008, respectively. It was also established in compliance with Decree 1757 of 1994, administrative acts issued by the Ministry of Social Protection, as well as obeying the provisions of the Universal Declaration on Bioethics and Human Rights by UNESCO.

The Ethics, Bioethics and Research Committee certifies that:

1. All of its members reviewed the following documents of this project.

a. (X) Project Summary
b. () Research Protocol
c. (X) Informed Consent Form
d. () Adverse Event Protocol
e. () Data collection form
f. () Investigator's Brochure (if applicable)
g. () Result of evaluation by other committees (if applicable)

2. The Committee considered that: the present study is valid from the ethical point of view, the intended research is considered safe for the people involved, and the research meets the requirements of good clinical practices.
3. The committee considers that the measures being taken to protect the study subjects are appropriate.

4. The Committee may be convened at the request of any Member of the Committee or the University's Board of Directors to review any matter relating to the rights and welfare of human subjects involved in the study.

5. The Main investigator shall:

a) Report any intended changes made to the project. These changes cannot be implemented without prior approval from the University's Ethics, Bioethics and Research Committee except when it compromises the life of the study participant.
b) Inform any unforeseen situation that he or she considers it implies a risk to the subjects, the community or the environment in which the study is being carried out.
c) Inform the Committee of any new and relevant piece of information on the study, which may affect the risk-benefit relation of the participating subjects.
d) Report premature termination or suspension of the project explaining the causes or reasons.
e) (Once the project has ended) undertake to provide feedback at the place where the research was conducted to present the results of the study.
f) The final report of the investigation is due to be delivered to the committee, within a maximum period of one month, after completion of the investigation.
g) (If the time for the development of the project is more than one year) submit an annual report of the project.
h) Be committed to submit a published article of the investigation in an indexed journal to the Neiva's University Hospital.

Dra. SALCEDO MARIA ANGELA RESTREPO
President of the Ethics, Bioethics and Research Committee.

Appendix 8 Results of the statistical analysis

Definitions

Kappa, level of agreement between screening tool (GMHAT) and gold standard (psychiatrist) adjusted for chance agreement

Kappa = (exact agreement – chance agreement)/(1 – chance agreement)

Sensitivity[1] – proportion of cases (mental illness) identified by GMHAT

Specificity[1] – proportion of non-cases (no mental illness) identified by GMHAT

PPV[1] – Probability of being a case if identified by GMHAT as having mental illness

NPV[1] – Probability of not having mental illness if identified by GMHAT as not having mental illness

[1] *Can be multiplied by 100 and reported as percentage.*

Formula for confidence intervals

Kappa

Kappa value +/- 1.96 x standard error

Sensitivity, specificity, Positive predictive value (PPV) and negative predictive value (NPV)

$$p \pm (1.96\ x \sqrt{\frac{p\ x\ (1-p)}{n}})$$

P = proportion *n = sample size*

GMHAT compared to Psychiatrist

1. Mental illness

		95% Confidence interval
Kappa	0.59	(0.46, 0.72)
Sensitivity	0.92	(0.89, 0.95)
Specificity	0.77	(0.63, 0.91)
PPV	0.97	(0.95, 0.99)
NPV	0.45	(0.31, 0.59)

2. Psychosis

		95% Confidence interval
Kappa	0.56	(0.46, 0.66)
Sensitivity	0.78	(0.70, 0.86)
Specificity	0.79	(0.73, 0.85)
PPV	0.71	(0.63, 0.79)
NPV	0.85	(0.80, 0.90)

3. Anxiety

		95% Confidence interval
Kappa	0.14	(0.06, 0.22)
Sensitivity	1.00	N/A
Specificity	0.71	(0.66, 0.76)
PPV	0.11	(0.05, 0.17)
NPV	1.00	N/A

N/A – Not applicable

4. Mania

		95% Confidence interval
Kappa	0.61	(0.49, 0.73)
Sensitivity	0.63	(0.45, 0.81)
Specificity	0.95	(0.92, 0.98)
PPV	0.74	(0.62, 0.86)
NPV	0.91	(0.87, 0.95)

5. Alcohol and drug

		95% Confidence interval
Kappa	0.62	(0.50, 0.74)
Sensitivity	0.67	(0.55, 0.79)
Specificity	0.93	(0.90, 0.96)
PPV	0.73	(0.62, 0.84)
NPV	0.91	(0.87, 0.95)

6. Learning difficulties

		95% Confidence interval
Kappa	0.40	(0.26, 0.55)
Sensitivity	0.40	(0.26, 0.54)
Specificity	0.95	(0.92, 0.98)
PPV	0.61	(0.44, 0.78)
NPV	0.89	(0.85, 0.93)

7. Personality

		95% Confidence interval
Kappa	0.39	(0.22, 0.56)
Sensitivity	0.43	(0.25, 0.61)
Specificity	0.94	(0.91, 0.97)
PPV	0.46	(0.28, 0.64)
NPV	0.94	(0.91, 0.97)

8. Other

		95% Confidence interval

Kappa	0.34	(0.05, 0.63)
Sensitivity	0.23	(0.01, 0.46)
Specificity	1.00	N/A
PPV	0.75	(0.54, 0.96)
NPV	0.97	(0.95, 0.99)

9. Depression

		95% Confidence interval
Kappa	0.53	(0.41, 0.65)
Sensitivity	0.84	(0.72, 0.96)
Specificity	0.86	(0.82, 0.90)
PPV	0.47	(0.35, 0.59)
NPV	0.97	(0.95, 0.99)

10. Organic

		95% Confidence interval
Kappa	0.87	(0.69, 1.00)
Sensitivity	0.88	(0.65, 1.00)
Specificity	1.00	N/A
PPV	0.88	(0.65, 1.00)
NPV	1.00	N/A

GMHAT compared to GP

11. Mental illness

		95% Confidence interval
Kappa	0.41	(0.25, 0.57)
Sensitivity	0.90	(0.86, 0.94)
Specificity	0.59	(0.41, 0.77)
PPV	0.95	(0.92, 0.98)
NPV	0.41	(0.26, 0.52)

12. Psychosis

		95% Confidence interval
Kappa	0.74	(0.66, 0.82)
Sensitivity	0.95	(0.91, 0.99)
Specificity	0.83	(0.77, 0.89)
PPV	0.76	(0.68, 0.84)
NPV	0.97	(0.94, 1.00)

13. Anxiety

		95% Confidence interval
Kappa	0.25	(0.14, 0.36)
Sensitivity	0.86	(0.72, 1.00)
Specificity	0.73	(0.67, 0.79)
PPV	0.22	(0.13, 0.31)
NPV	0.98	(0.96, 1.00)

N/A – Not applicable

14. Mania

		95% Confidence interval
Kappa	0.72	(0.61, 0.83)
Sensitivity	0.75	(0.63, 0.87)
Specificity	0.96	(0.93, 0.99)
PPV	0.78	(0.66, 0.90)
NPV	0.95	(0.92, 0.98)

15. Alcohol and drug

		95% Confidence interval
Kappa	0.77	(0.67, 0.87)
Sensitivity	0.85	(0.75, 0.95)
Specificity	0.95	(0.92, 0.98)
PPV	0.77	(0.66, 0.88)
NPV	0.97	(0.95, 0.99)

16. Learning difficulties

		95% Confidence interval
Kappa	0.60	(0.44, 0.76)
Sensitivity	0.69	(0.51, 0.87)
Specificity	0.95	(0.92, 0.98)
PPV	0.60	(0.42, 0.78)
NPV	0.97	(0.95, 0.99)

17. Personality

		95% Confidence interval
Kappa	0.50	(0.33, 0.67)
Sensitivity	0.52	(0.34, 0.70)
Specificity	0.95	(0.92, 0.98)
PPV	0.59	(0.40, 0.78)
NPV	0.94	(0.91, 0.97)

18. Other

		95% Confidence interval
Kappa	0.24	(0.00, 0.64)
Sensitivity	0.75	(0.33, 1.00)
Specificity	0.99	(0.98, 1.00)
PPV	0.75	(0.33, 1.00)
NPV	0.99	(0.99, 1.00)

19. Depression

		95% Confidence interval
Kappa	0.62	(0.51, 0.73)
Sensitivity	0.73	(0.62, 0.84)
Specificity	0.91	(0.87, 0.95)
PPV	0.68	(0.56, 0.80)
NPV	0.92	(0.88, 0.96)

20. Organic

		95% Confidence interval
Kappa	0.48	(0.21, 0.75)
Sensitivity	0.38	(0.12, 0.64)
Specificity	0.99	(0.98, 1.00)
PPV	0.71	(0.37, 1.00)
NPV	0.97	(0.95, 0.99)

Appendix 9

An epidemiological study of psychiatric disorders in rural population: Using global mental health assessment tool

Karthik K N, T S Sathyanarayana Rao

Department of Psychiatry, Jagadguru Sri Shivarathreeshwara University, Jagadguru Sri Shivarathreeshwara Medical College Hospital, Mysore, Karnataka, India

Aims and Objectives: To estimate the prevalence of psychiatric disorders in rural population using computerised global mental health assessment tool (GMHAT) and to find put the quality of life by using World Health Organization Quality of Life (WHO QoL), and to help the health workers in primary care setting in identifying psychiatric problems and referring them to higher centers by applying GMHAT.

Materials and Methods: All the permanent residents of Suttur above the age of 6 years were considered eligible for the study. A systematic random sampling method was used and about 300 households were visited and the sociodemographic data was collected, each subject was visited at his door step by the examiner and GMHAT was applied. Later WHO Qol-BREF was applied to the psychiatrically ill. Statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 16.0.

Results: Prevalence of psychiatric disorders in Suttur village by using GMHAT was 284 per 1,000 population. Depression was most prevalent (59.5%), followed by alcohol abuse (15.1%), and anxiety (14.4%). Other detailed results will be presented in the conference. Sociodemographic variables like age, sex, occupation, marital status, economic status, etc., were found to have a statistically significant relationship with the occurrence of psychiatric illness.

Conclusion: The detailed results are comparable to the earlier studies conducted in the same area. Implying that, computerised global mental health assessment tool can be used as a standardised diagnosing tool in primary health care centers helping the primary care workers to diagnose psychiatric cases in a short span of time and also in referring them to specialty centers.

Appendix 10

Title: "Impact of GMHAT/PC in Integrated Teaching to Second MBBS student"

Authors:

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3. Dr I D Gupta , Professor of Department of Psychiatry, SMS Medical College Jaipur
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5. Dr. Sanjay Singhal, Assistant Professor, Department of Physiology, SMS Medical College, Jaipur.
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Abstract

Background: Medical Council of India has laid down the norms and guidelines for integrated teaching to enhance the student's approach for learning in a comprehensive manner. Improvement in the quality of learning through integrated learning is the need of hour. The use of GMHAT/PC in medical education is considered as a method for integrated teaching in mental health to medical students in some countries.

Objective: To compare the effects of traditional teaching with Integrated teaching with the use of GMHAT/PC.

Materials and Methods: An analytic observational study was carried out on II MBBS students. After taking pre-test of students they were divided randomly into two groups, one group underwent learning through tradition teaching and other group took sessions through integrated teaching technique with GMHAT/PC. After finishing the topic, a post-test was taken. Significance of difference of scores of pre and post-test of students was assessed by paired 't' test while significance of difference in mean change of scores in both groups of students was assessed by unpaired 't' test. Student's and faculty's perception regarding the new approach was also inquired.

Results: Mean change of score of students from pre-test to post-test in the study group was significantly higher ($p<0.001$) than in control group (3.43±1.88 v/s 0.65±1.81). More than 90 % students liked and retained the subject better with the new teaching methodology only 9.3% felt it more time consuming. Majority of faculty had liked this method.

Conclusions: Integrated teaching was found to be more effective than the traditional one. This INTEGRATED TL method with GMHAT/PC was well accepted by faculty as well as students. Both students and faculty had a positive attitude toward this innovation in education.

Key words: MCI, Integrated teaching, GMHAT/PC.

Introduction:

Integrated teaching is a process by which student's potential is enhanced to approach a subject logically, scientifically and in an objective manner. A number of recommendations are made to incorporate multi – disciplinary integrated teaching module as an essential component of medical school curriculum. The learning process, applications and clinical skills modules are designed in such a way that the student moves to a desired direction to achieve a high standard medical education to provide a quality patient care[1].

The Medical Council of India has laid down norms and stipulations for integrated teaching, evolving the medical curriculum in a manner that enhances the student's approach to learning in a comprehensive way[2].

In the field of medical education several innovations and new trends have come up and have been accepted globally that include Integrated teaching, problem based learning, self-directed learning and community orientation[3]. Integrated teaching is being employed in bridging the gap between academic knowledge and its practical application at a number of places[4]

Medical education primarily aims to train students to possess sound clinical competences with community orientation and proficient communication skills. All these are fundamental to future doctors who face the challenges of formidable health problems.[5]

With the existing medical practices, there is a general dissatisfaction. The currant medical curriculum is considered as the basis of this dissatisfaction[6]. These are specialty based, teacher centred, examination oriented placements where students are presented with a series of disciplines or building blocks in isolation. Such modules are under criticism for placing too much emphasis on memorization of facts and figures and for overloading students with too much information.[7] As a result, students are unable to link their knowledge to routine clinical problems or cases. This in turn affects their ability to make sensible clinical judgments i.e. arriving at a diagnosis and providing a person centred treatment.

The principles of integrated learning are getting incorporated in the curricula in increasing number of specialties in their medical courses of number of universities[8].

Medical educationists also realised that there was need for integration of basic and clinical medical sciences[9]. Medical teaching traditionally commenced with basic (pre-clinical) sciences followed by clinical sciences in various disciplines maintaining their rigid boundaries. It was observed that such fragmentation in medical education did not serve the very spirit of medical pedagogy. Even bigger challenge remains to include inter-professional learning in medical education. This multi-disciplinary approach has gained acceptance worldwide and has opened new horizons for a broader interactive medical education. [10] Sadly, mental health is not given much priority in such learning modules. Medical graduates as a result at the end of their training are often poorly equipped with skills to

make diagnosis and provide treatment for people with mental illness. We as a result felt that an integrated medical teaching for mental health using GMHAT/PC will not only break the boundaries of structured teaching but also sensitise students to the multi-disciplinary and multi-axial approach to clinical issues. Mental health problems are one of the leading causes of disability in the world (WHO 2001). All health professionals, particularly all doctors should have a reasonable training in identifying and treating mental illness. The Global Mental Health Assessment Tool for primary care and general health (GMHAT/PC) is increasingly considered as a good training tool for health professionals and considered to be included in teaching curriculum of medical training.

There is good evidence that students learn best when they are engaged when the learning is provided in variety of ways and formats[11]. Therefore, this study of integrated teaching with GMHAT/PC was designed for undergraduate medical students with following objectives:-

1. To assess and compare the effect of traditional teaching with Integrated TL modular teaching in II MBBS students with the help of GMHAT/PC.

2. To find out the feedback of students and faculty teachers about this Integrated TL modular teaching with GMHAT/PC.

Materials and Methods:

The study was conducted on second MBBS (3rd year) students. Following getting written inform consent, students were given a pre-test questionnaire. They were then randomly divided in two groups, one group were taught Psychopharmacology in a traditional way (Control group) whereas other group of students (Study Group) were taught Psychopharmacology with this new integrated TL with GMHAT/PC teaching and training. The study had a full approval from the Institute's Ethics committee.

Integrated teaching was implemented by the active involvement of the departments of Physiology, Medicine and Psychiatry. The faculty of all the departments was introduced to this method and feedback forms from before getting their responses.

At the end of their training, both groups were again assessed with a post-test questionnaire. Students absent on the day of post-test were excluded from the study.

Significance of effect of traditional teaching and integrated TL method teaching were assessed with the difference of scores of pre and post-test students paired 't' test.

Significance of difference in effect of traditional teaching and integrated TL method teaching with GMHAT/PC were assessed with students paired 't' test.

Student's and faculty's perception of the new approach was also inquired.

The students in the control group were showed clinical examination of mentally ill patient using GMHAT/PC and students were taught the significance of psycho-pathological and clinical association.

The description of the GMHAT/PC is outlined in the research reports,[4–7] which highlights its reliability and validity as well as its usefulness in primary care and general health setting. We therefore considered using GMHAT/PC in teaching of medical student .

Result

Out of a total of 150, 106 students were present on the day of selection of subjects for the study. All 106 students gave written informed consent to participate in the study. After getting their pre-test questionnaire, they were randomly divided into two groups of 53 for the study group (integrated TL teaching) and other 53 for the control group (traditional teaching). At the time of post-test three from the study group and two from the control group were absent. As a result, 50 of study group and 51 of control group students' findings were used to evaluate of effect of teaching.

The results show that in the pre-test assessment although mean scores of control group was slightly higher than the study group (43±12.5 v/s 39±11.5), there was no statically significant difference ($p>0.05$) in the scores of two groups.

The post-test mean scores of the control group was slightly higher than pre-test scores (43±12.5 v/s 48±14) but the difference didn't reach a significant level ($p>0.05$). Whereas the post-test mean scores of study group was significantly higher ($p<0.001$) than compared with pre-test scores (67±15 v/s 39±11.5).

The change in mean scores from pre-test to post-test in both the group showed that the mean change of score of students in study group was significantly higher ($p<0.001$) than in control group (28±1 v/s 5±1.5).

Student's feedback report indicated that out of 50 students of study group, 46 (92%) liked the new teaching methodology and felt that they had a better understanding of pathology in the clinical context. Only four (8%) felt that a longer time was spent on teaching on a single discipline. Thirty-eight (76%) students felt that they could easily relate to the clinical aspects and wished this approach to be extended to other topics as well.

The faculty's feedback was equally positive. Teaching staff from the faculty of physiology, medicine and Psychiatry 97%, 100%, and 86% respectively preferred new method and 59%, 62% and 51% respectively were in favour of applying this method in MBBS curriculum at least for certain selected topics.

Discussion

In the view of new guideline of regulatory body in medical education, medical colleges in every country must educate their students in all aspects of care that includes physical, mental health, social and spiritual well-being. Mental health training in medical curriculum is limited in most places. A high mental morbidity in all communities makes it essential that all future doctors are well trained to detect and treat mental illness in their clinical practice. There is not much aid available that covers most aspects of mental disorders and can be used in teaching and training medical students. We felt that the GMHAT/PC can fill this gap. In addition to assist in acquiring skills in diagnosing mental disorders, the GMHAT/PC would also help in planning evidence-based treatments, as the pathways of care and guidelines are part of the programme. This will give more chance to follow the treatment guidelines compared to current practice. [14]

The main objective of medical education in every country's institutions is to educate and train students in such a way that they are fit for purpose to provide a high quality health care. Educational programmes must reflect that underlying philosophy. One analogy is that of a functioning of human body, where no single system (organ) functions in isolation but operates in an organised and interdependent manner to achieve optimum level of functioning.[1] Teachers in medicine should facilitate in sharing information to the students in a planned, organised and integrated manner[1].This applies to all aspect of health and even more so for mental illness.

The need for integration is also felt by the students who advocated that the GMHAT/PC should be included in MBBS teaching programme. Students find the pre-clinical subjects not so interesting, mainly because their teachings happen to be more theoretical and rather fragmented[12]. A similar area is taught by each pre-clinical department at different times, without the knowledge of what is taught by other departments on the same topic. This disjointed approach leads to unnecessary repetition, loss of valuable time and lack of clarity in the student's mind. [12]

This study showed that those students who were taught by this new integrated TL method using GMHAT/PC were much more satisfied with the teaching than students of traditional teaching.

Overwhelming majority of faculty members of physiology, Medicine and Psychiatry (97%, 100% and 86% respectively) liked this new method of teaching with GMHAT/PC and more than half of faculty member (59%, 62% and 51% respectively) were in favour of applying this method in MBBS curriculum at least for mental health and for other certain selected topics.

Medical education should include integrated teaching, problem based learning, self-directed learning and community orientation[3]. Future doctors must have clinical competences and community orientation with proficient communication skills[5]. We have to move away from discipline based, teacher centred, examination oriented teaching[10] with placing too much emphasis on memorization of facts and figures and for overloading the students with excessive details. [7]

Ruth et al[13] suggested that the feedback helps the faculty in identifying the strength and weaknesses of their teaching methods. Even et al[14] also reported that feedback from students on teaching is very important to improve the quality of teaching and is also the best method available to bridge the communication gap between students and teachers.

Conclusion:

The new integrated TL method of integrated teaching with GMHAT/PC was found to be more effective than the traditional ones. This integrated TL method was well accepted by faculty as well as students. Students showed better clinical understanding. Students as well as faculty had a positive attitude toward this innovation in education using GMHAT/PC in order to improve the skills of diagnosis and better treatment of the mental health patients. This study also showed a model of integrated learning in mental health.

Appendix 11 National and international conferences

1. WONCA 20th world conference.

   Prague – Czech Republic. June 25th 2013

   Presentation: Use of GMHAT/PC in Primary Care around the world

273: Use of Global Mental Health Assessment Tool (GMHAT\PC) in Primary Care around the world

Submitted by Carl Steylaerts on Sun, 29/03/2015 - 13:38

Conference: Wonca 2013 - Prague
Author(s):
V. Kumar Sharma1, P. Andrea Tejada1, B. Quinn2, J. Copeland3, M. Bowen1
1 Health and Social Care, University of Chester, Chester, United Kingdom; 2 Primary Care, Black Heath Medical Centre, Wirral, United Kingdom; 3 Psychiatry, Liverpool University, Liverpool, United Kingdom
Text:
Presentation type: Workshop
Background: Sharma and Copeland developed computer assisted clinical interview, the Global Mental Health Assessment Tool GMHAT/PC to assist general practitioners and front line health professionals to make a quick, convenient, and comprehensive, standardised mental health assessment. A health professional by using GMHAT/PC, in about fifteen minutes, covers worries; anxiety and panic attacks; concentration; depressed mood, including suicidal risk; sleep; appetite; eating disorders; hypochondriasis; obsessions and compulsions; phobia; mania/hypomania; psychotic symptoms; disorientation; memory impairment; alcohol misuse; drug misuse; personality problems and stressors. It gives computer assisted diagnosis, symptom ratings a summary letter as well as treatment guidelines. Its use by health professionals may help in detecting and managing mental disorders in primary care and general health settings more effectively. So far, this has been translated in to Spanish, Netherlands, German, Chinese, Arabic and Hindi. The results of cross cultural studies are very encouraging and will be presented in the symposium. The GMHAT/PC has also been used in the general health setting including in elderly population, cardiac patients (UK), respiratory and epilepsy patients (India) with promising findings.
Methods: The training workshop intended to train the trainers so that they can support and train health professionals for its routine use in their clinical practice. The work shop will be interactive with practical demonstration of the use of GMHAT.
Results: Findings of the validity studies done in the UK, Netherlands, Abou Dhabi, India, and of Spanish version in Colombia will be presented. GMHAT/PC has a sensitivity and specificity of over 0.85 in all studies.

2. LII Colombian Congress of Psychiatry

   Cartagena- Colombia. October 10th 2013

   Workshop: The Global Mental Health Assessment Tool- GMHAT/PC

Jueves 10 de Octubre 2013

Salón Hora	Salón Nueva Granada A	Salón Nueva Granada B	Salón Nueva Granada E		
9:00 a.m. 10:00 a.m. 11:00 a.m. 12:00 a.m.	**Actividad con la Comunidad** Estigma y discriminación hacia las personas con transtorno mental y sus familias Edwin Herazo Coordinador Subcomité de Derechos Humanos Auditorio del Claustro de la Merced, Universidad de Cartagena, Centro Histórico		Actualización en psiquiatría infantil dirigido a padres y cuidadores Hernán Darío Giraldo Subcomité de Psiquiatría Infantil	Inscripciones	Lobby
1:00 p.m. 2:00 p.m. 3:00 p.m. 4:00 p.m. 5:00 p.m.	Taller 1 Luisa F. Alarcón Subcomité Psiquiatría Forense	**Taller 2** Hipnosis Médica: Aplicaciones prácticas en Medicina Psicosomática y de Interconsulta José R. Maldonado MD, FAPM, FACFE Carlos Cardeño Subcomité de Psiquiatría de Enlace	Workshop: The Global Mental Health Assessment Tool- GMHAT/PC Paola Andrea Tejada Morales		

3. XVI World Congress of Psychiatry

   Madrid – Spain. September 16th 2014

   Presentation: Reliability and validity of Spanish version of GMHAT/PC

Session:	Regular Symposium	**SPEAKER 2**	Code SY261
Title:	Reliability and validity of Spanish version of GMHAT/PC		
Speaker	P. Tejada [1], L. Jaramillo [2] [1]. University of Chester, Chester, United Kingdom [2]. National University, Colombia		
Abstract	Objectives: The aim of this study is to assess the reliability and validity of Global Mental Health Assessment Tool /Primary Care -Spanish version in Colombia. Methods: The study included participants ranging from normal to having severe mental illness. They were recruited from general health as well as mental health settings. Those in the mental health setting were expected to have a wide range of psychiatric diagnoses (anxiety disorders, depression, psychosis, bipolar		

4. Research & Pedagogical Seminar Series. Faculty of Health & Social Care

   University of Chester. October 15th 2014

Presentation: Validity and feasibility study on the Spanish version of GMHAT, the Global Mental Health Assessment Tool Primary Care and General Health Setting Version (GMHAT/PC)

5. Trauma Registries Implementation in Latin America: trauma and acute care surgery informatics workshop.

Cartagena – Colombia February 24th 2017

Presentation: Trauma and Mental Health Electronic Data Analysis Tools: Integrations to Explore Interactions and Policy Changes

Appendix 12 Published paper 1

INVESTIGACIÓN ORIGINAL

Revisión crítica sobre los instrumentos para la evaluación psiquiátrica en atención primaria

Critical revision of Mental health Assessment Tools in Primary Care

Paola Andrea Tejada MSc[1] • Luis Eduardo Jaramillo MSc[2] • Ricardo Sánchez-Pedraza MSc[2] • Vimal Sharma PhD[1]

Recibido: 15/4/2013 / **Aceptado:** 12/3/2014

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| Resumen |

Antecedentes. Actualmente existen múltiples escalas y guías de entrevista en atención primaria en salud mental. Sin embargo, estas tienen limitaciones en la práctica clínica diaria. Muchas fueron creadas para realizar investigación, otras requieren gran entrenamiento de quien las aplica y en su gran mayoría cubren un rango limitado de síntomas, por ejemplo ansiedad y depresión. Escalas de gran uso clínico para síntomas ansiosos y depresivos permiten evaluar la presencia o ausencia de síntomas más que dar un diagnóstico específico y deja por fuera un espectro amplio de trastornos psiquiátricos como la demencia y la psicosis. Por estas razones, se han propuesto múltiples alternativas que permitan superar los problemas mencionados.

Objetivo. Revisar de forma crítica los instrumentos utilizados para la evaluación psiquiátrica en atención primaria.

Materiales y métodos. Revisión de la literatura.

Resultados. Dentro de las herramientas desarrolladas y más utilizadas se encuentran la Primary Care Evaluation of Mental Disorders (PRIME-MD) y el Patient Health Questionnaire (PHQ). Otra estrategia es la Herramienta Mundial de Evaluación en Salud Mental (GMHAT). Esta herramienta permite hacer tamizajes amplios y diagnósticos de problemas mentales por personas con poco entrenamiento en psiquiatría y en poco tiempo.

Conclusiones. Se recomiendan los instrumentos breves que realizan una valoración global del estado mental sobre aquellos que son específicos para un solo trastorno.

Palabras clave: Atención Primaria de Salud, Salud Mental, Escalas de Valoración Psiquiátrica, Diagnóstico, Cribado (DeCS).

Tejada PA, Jaramillo LE, Sánchez-Pedraza R, Vimal S. Revisión crítica sobre los instrumentos para la evaluación psiquiátrica en atención primaria. Rev Fac Med. 2014;62:101-110.

Summary

Background. There are many instruments to use in primary care in Mental Health. However, the overall limitations found are that some instruments were developed specifically for research purposes and scales cover a limited range of symptoms and mental disorders like anxiety and depression. Scales used in clinical settings for anxiety and depressive symptoms usually assess the presence or absence of symptoms rather than give a specific diagnosis and leaves out a broad spectrum of psychiatric disorders such as dementia and psychosis. For this reasons, multiple alternatives to overcome these problems have been proposed worldwide.

Objective. To review in a critical way the instruments used in primary care.

Materials and methods. Literature review.

Results. Among the tools developed and used are the Primary Care Evaluation of Mental Disorders (PRIME-MD) and the Patient Health Questionnaire (PHQ). Another instrument is the Global Mental Health Assessment Tool (GMHAT). This tool allows broad screening and diagnosis of mental health problems for people with little training in psychiatry and in a short time.

Conclusion. Short Instruments that perform an overall assessment of the mental state are preferred over those that are specific to a single disorder.

Key words: Primary Care, Mental Health, Psychiatric Status Rating Scales, Diagnosis, Straining (MeSH).

Tejada PA, Jaramillo LE, Sánchez-Pedraza R, Vimal S. Critical revision of Mental health Assessment Tools in Primary Care. Rev Fac Med 2014; 62:101-110.

Introducción

Los problemas de salud mental constituyen una de las principales causas de discapacidad en el mundo (1). Usualmente los servicios de atención primaria (AP) no tienen el personal con el entrenamiento necesario para la detección y el tratamiento de las personas con problemas de salud mental. Muchas veces son los médicos generales los primeros contactos que tienen aquellos que padecen algún tipo de patología mental (1). Por esto es importante establecer sistemas que ayuden a estos médicos a identificar a las personas con problemas de salud mental en la primera oportunidad y puedan brindar la intervención más adecuada.

Aunque únicamente el 5,4% de los pacientes consultan por una razón psiquiátrica, hay datos que muestran que 1 de cada 4 personas que entra en contacto con un servicio de salud presenta un trastorno mental reconocido por el CIE10 (1,2). También se ha encontrado que los médicos generales no detectan ni tratan entre el 50% y el 75% de los casos (1,2).

Los trastornos más frecuentes en los servicios de AP son los afectivos (31%), de ansiedad (19%) y somatomorfos (18%) (2). El trastorno depresivo es la segunda patología crónica más frecuente en AP (3,4) y aproximadamente 12% de los pacientes atendidos en estos servicios reúnen criterios para depresión (3). A pesar de esto, solo la mitad de estos pacientes son reconocidos por los médicos generales (2).

Tanto la depresión como la ansiedad pueden presentarse con síntomas somáticos como motivo de consulta (4-7). Dos de cada tres pacientes con depresión reportan síntomas somáticos como motivo de consulta en AP (8). Esto hace no solo que puedan pasar desapercibidos sino que su falta de reconocimiento lleva a que a los pacientes se les realicen laboratorios innecesarios, se les formulen medicamentos inadecuados, sean remitidos de un servicio a otro y en últimas se haga más crónico su cuadro ansioso o depresivo (9).

Otras patologías, como el trastorno afectivo bipolar tienen una prevalencia de 3,9% en la comunidad, pero se han encontrado prevalencias hasta del 9,8% en servicios de AP (10). Se sabe también que los problemas relacionados con el consumo de alcohol no son fácilmente reconocidos en los servicios de AP pese a que problemas de abuso o dependencia pueden encontrarse en un 10% de los casos (2,11). Las razones para que esto suceda incluyen la falta de entrenamiento, el no conocimiento de escalas disponibles y las actitudes negativas asociadas a preguntar sobre el consumo de alcohol (8). La sensibilidad diagnóstica de los médicos generales para la identificación de trastornos por uso de alcohol es de 41,7%, pero solo en un 27,3% de los casos esto se consigna en la correspondiente historia clínica (12). En cuanto al abuso de sustancias, stá presente en uno de cada cinco pacientes en contextos médicos generales pero solo al 20% de ellos se les realizan preguntas de tamización para su detección (5).

En términos generales, los principales obstáculos para el reconocimiento de los trastornos mentales por los médicos de AP son: desconocimiento de los criterios diagnósticos, desconocimiento acerca de las preguntas adecuadas para su evaluación y limitaciones de tiempo inherentes a contextos clínicos con sobrecarga de trabajo (13,14).

Por los motivos mencionados, es importante que los profesionales que trabajan en atención primaria cuenten con instrumentos fáciles de aplicar, válidos y confiables que les permitan identificar y manejar pacientes con enfermedad mental. Existen diferentes técnicas para la recolección de información o instrumentos. Las escalas son instrumentos de medición compuestas por ítems que permiten medir fenómenos que no son directamente observables (15). Es importante señalar que las escalas no hacen un diagnóstico formal sino que ayudan a la identificación de personas en alto riesgo o alta probabilidad de reunir criterios para el trastorno o categoría diagnóstica explorada. La entrevista estructurada consiste en una guía de preguntas o temas a tratar las cuales evalúan diferentes variables. Las pruebas cognitivas constan de ítems que evalúan funciones como memoria, lenguaje, praxias y orientación (6).

La selección de un adecuado instrumento o escala es muy importante. Para esto se recomienda tener en cuenta las características de la población en la que se va a aplicar, sus propiedades psicométricas (validez, sensibilidad y especificidad), el tiempo requerido para su aplicación y su utilidad (3,15).

El diagnóstico preciso basado en criterios internacionalmente estandarizados es esencial para realizar una intervención clínica adecuada y para realizar un adecuado monitoreo epidemiológico (16). La falta de un diagnóstico adecuado puede llevar a un tratamiento inadecuado (4). El objetivo de este artículo es revisar críticamente los instrumentos, escalas y herramientas utilizados actualmente para la evaluación psiquiátrica en AP, señalar sus limitaciones y sugerir instrumentos fáciles de aplicar, válidos y confiables.

Materiales y métodos

Se realizó una búsqueda selectiva de literatura en las bases de datos PUBMED y SciELO de estudios sobre instrumentos, escalas y herramientas utilizados para la evaluación

psiquiátrica en adultos en atención primaria en salud. La búsqueda se realizó con los términos MeSH "Primary Health Care", "Mental Disorders/diagnosis" "Mass Screening" y "Questionnaires". Para la búsqueda en SciELO se utilizaron los DeCS correspondientes a los anteriores términos MeSH. Se seleccionaron estudios publicados en idioma inglés y español, en adultos y sin restricción de tiempo.

Dos investigadores revisaron las referencias bibliográficas citadas por los artículos seleccionados y se buscaron aquellos artículos pertinentes a la búsqueda que no fueron detectados inicialmente. Los artículos fueron revisados por dos de los investigadores y se seleccionaron aquellos donde se especificara que los instrumentos hubieran sido utilizados en atención primaria y se contara con datos sobre su descripción y propiedades psicométricas. Los indicadores del desempeño psicométrico que se utilizaron fueron sensibilidad y especificidad.

Resultados

En total se encontraron 325 artículos. De estos se excluyeron 197 porque no describían instrumentos, no eran específicos para atención primaria en salud mental o su población eran niños y adolescentes. Los 128 artículos restantes hacían referencia a 40 instrumentos. De estos, 33 corresponden a escalas, 3 a entrevistas estructuradas y 4 a pruebas cognitivas. Un resumen de los instrumentos encontrados y sus propiedades psicométricas se muestra en las tablas 1, 2 y 3.

Tabla 1. Escalas para la evaluación psiquiátrica en adultos en atención primaria en salud.

	Aplicación	Sensibilidad %	Especificidad %
Primary Care Evaluation of Mental Disorders PRIME-MD (1,2,13,17,18)	Cuestionario autoreporte/ Entrevista estructurada	72-81	66-100
Depression in the Medically Ill-18 DMI-18 (3)	Autoreporte	89-97	59-83
Beck Depression Inventory for Primary Care BDI PC (3,19)	Autoreporte	74-83	72-80
Hospital Anxiety and Depression Scale HADS-D (3,19)	Autoreporte	74-86	75-76
Patient Health Questionnaire PHQ-9 (3,19-22)	Autoreporte	68-93	75-96
Web-Based Depression and Anxiety Test WB-DAT (4)	Autoreporte asistido por computador	63-95	87-97
My Mood Monitor M-3 checklist (10)	Autoreporte	82-88	70-80
Alcohol Use Disorders / Identification Test AUDIT (11,23)	Autoreporte	55-94	79-98
General Health Questionnaire GHQ (14)	Autoreporte	32-68	65-93
Symptom Check-List SCL-90-R (14)	Autoreporte	39-75	59-95
Patient Health Questionnaire PHQ (16,24)	Autoreporte	75-87	88-90
Self-Report Questionnaire SRQ (2,26)	Autoreporte	63-90	44-95
Four-Item Questionnaire (27)	Autoreporte	78	95
Center for Epidemiologic Studies-Depression scale CES-D (17,23)	Autoreporte	73-92	70-74
GDS 15 (28)	Autoreporte	76-82	64-98
GDS 30 (28)	Autoreporte	77	65
Edinburgh Postnatal Depression Scale EPDS (17)	Autoreporte	72-89	86-95
Postpartum Depression Screening Scale PDSS (17)	Autoreporte	78	85
Social Anxiety Screening Questionnaire (29)	Autoreporte	84	67
Kessler 10 K-10 (30)	Autoreporte	72-78	73-79
Whiteley-7 scale (31)	Autoreporte	71-100	62-65
Early Detection Primary Care Checklist PCCL (32)	Heteroaplicada	89	60
Symptom Driven Diagnostic System for Primary Care SDDS-PC (33)	Cuestionario de autoreporte / Entrevista estructurada / Registro de seguimiento (asistida por computador)	43-90	54-98
Provisional Diagnostic Instrument-4 (34)	Autoreporte	80-83	73-82
Case-finding and Help Assessment Tool CHAT (35)	Autoreporte	26-96	40-97
Alcohol, Smoking and Substance Involvement Screening Test ASSIST (36)	Autoreporte	54-97	50-96
Substance abuse and mental illness symptoms screener SAMISS (37)	Autoreporte	86-95	49-75
International HIV Dementia Scale IHDS (37)	Autoreporte	53-86	32-80
Cuestionario SCOFF para trastorno de conducta alimentaria (38)	Autoreporte	84.6	89.6
single-item screening test for unhealthy alcohol use (39)	Pregunta unica	81.8	79.3
4-item Primary Care Post-Traumatic Stress Disorder screen PC-PTSD (40)	Autoreporte	78	87
Overall Anxiety Severity and Impairment Scale OASIS (41)	Autoreporte	89	71
Hopkins Symptom Checklist-25 HSCL-25 (42)	Autoreporte	89	60-73

Tabla 2. Entrevistas para la evaluación psiquiátrica en adultos en atención primaria en salud.

	Sensibilidad %	Especificidad %
Mini International Neuropsychiatric Interview MINI (43)	75-92	90-99
Entrevista Diagnóstica Internacional Compuesta CIDI (44) (45)	68-80	90-98
Structured Psychiatric Interview for General Practice SPIFA (46)	ND	ND

Tabla 3. Test cognitivos para la evaluación psiquiátrica en adultos en atención primaria en salud.

	Aplicación	Sensibilidad %	Especificidad %
General Practitioner Cognitive Assessment ofCognition GPCOG (47) (48)	Prueba para el paciente y preguntas para informante	82	92
Memory Impairment Screen MIS (48,49)	Prueba cognitiva	80-87	96
Mini-Cognitive Assessment Instrument Mini-Cog (48,49)	Prueba cognitiva	71-79	89
Public Health Center Cognitive Dysfunction Test PHC-cog (50)	Prueba cognitiva para el paciente y preguntas para familiar	96	82

A pesar de la gran variedad de herramientas descritas en la literatura, estas presentan algunas barreras para su aplicación en AP. Las principales limitaciones encontradas en los instrumentos son: no fueron diseñados para su aplicación en AP, requieren 30 minutos o más para su aplicación, cubren un rango limitado de síntomas, fueron desarrollados con propósitos de investigación, son específicos para algunos grupos de edad, requieren la aplicación de más de una escala a cada paciente o no permiten aproximarse a un diagnostico psiquiátrico preciso. A continuación se presentan algunos ejemplos de estas limitantes.

Instrumentos para la detección de síntomas

Algunas escalas están diseñadas para realizar tamización de problemas y síntomas. Ejemplos de estas son el GHQ y el SCL-90 (14). El GHQ es un instrumento de autoreporte que permite tamizar trastornos psiquiátricos no psicóticos. Consta de una serie de preguntas que indagan sobre haber experimentado algún síntoma o comportamiento recientemente (14). El SCL-90 es un inventario de síntomas diseñado para abarcar un amplio rango de problemas psicológicos. Las respuestas se combinan en nueve dimensiones sintomáticas: somatización, obsesivo compulsivo, sensibilidad interpersonal, hostilidad, depresión, ansiedad, ideación paranoide, ansiedad fóbica y psicoticismo (14). Tanto el GHQ y el SCL-90 no permiten realizar diagnósticos específicos de acuerdo a sistemas operacionalizados de diagnósticos como el DSM o el CIE10 y solo señalan la presencia o ausencia de síntomas (1,11).

El Observatorio Nacional de Salud Mental de Colombia recomienda la aplicación del SRQ para la atención primaria en salud mental, aunque señala que la puntuación para este cuestionario no es universalmente aplicable (25). Este instrumento, desarrollado por la OMS, ha demostrado ser sensible para la identificación de desórdenes mentales en servicios médicos generales en múltiples países donde es aplicado (26). El instrumento es efectivo para detectar la presencia de trastornos mentales y diferenciar los trastornos psicóticos de los no psicóticos (26). A pesar de esto, solo abarca categorías sintomáticas muy amplias que dificultan una aproximación diagnostica que permita instaurar una medida terapéutica por parte de un médico general.

Instrumentos específicos para un solo problema

Considerando que el trastorno depresivo es el diagnostico psiquiátrico más frecuentemente encontrado en atención primaria la gran mayoría de las escalas se han desarrollado para el diagnóstico de esta entidad (51). Para determinar la capacidad de detección de la depresión en personas medicamente enfermas en atención primaria se han comparado la subescala de depresión de HADS, el BDI-PC, el PHQ-9, el Four-Item Questionnaire, la DMI-18, y la versión abreviada del DMI-18 (DMI-10) (3,19,27). Los resultados sugieren que todos estos instrumentos pueden ser recomendados como estrategias de tamización en depresión (3).

La escala de Zung y la CES-D también han mostrado su utilidad en atención primaria (6,23). Algunas escalas se han diseñado para el diagnóstico de depresión geriátrica siendo la GDS15 la que presenta mayor evidencia para su uso en atención primaria, pero se limita para este rango de edad (28). Se presenta una dificultad adicional cuando estas escalas han sido validadas al español donde versión ultracorta de la PRIME MD mostró poca especificidad (17).

Las escalas mencionadas están diseñadas para evaluar depresión unipolar y no ayudan a diferenciarla de la enfermedad bipolar. Esto es muy importante porque un error diagnóstico puede llevar a un tratamiento inadecuado que incluya la no prescripción de un modulador afectivo y la prescripción de un antidepresivo que pueda incrementar el riesgo de un episodio maniaco, hipomaniaco o mixto (8).

Existen escalas diseñadas también para la detección de ansiedad en primeros niveles de atención. Algunos de estos son el Social Anxiety Screening Questionnaire (29), la Overall Anxiety Severity and Impairment Scale OASIS (41) y la K-10, la cual ha sido validada y utilizada en múltiples países en el idioma español (30).

Instrumentos de tamización como el CAGE y el Michigan Alcoholism Screening Test se enfocan solo en la dependencia al alcohol (5,9). Aunque herramientas como el AUDIT han mostrado su utilidad en atención primaria para identificar los trastornos relacionados con el alcohol, requieren de la aplicación de instrumentos adicionales para la evaluación de otros problemas (9,23). Otros instrumentos específicos para evaluar consumo de sustancias incluyen el ASSIST (36), el SAMISS (37) y el single-item screening test for unhealthy alcohol use (39).

Otros instrumentos como la escala Whiteley presenta muy buenas propiedades psicométricas en atención primaria pero su uso está limitado para los diagnósticos de somatización e hipocondriasis (31). Escalas como la PCCL se han desarrollado como herramientas sencillas y rápidas para su uso en atención primaria para identificar etapas tempranas de psicosis (32). Dentro de los instrumentos de evaluación para los trastornos mentales orgánicos se encuentran el GPCOG (47,48), el MIS (48,49), el Mini-Cog (48,49) y el PHC-cog (50). Su uso se limita a pacientes con sospecha de algún tipo de deterioro cognitivo.

En resumen, la extensa comorbilidad psiquiátrica encontrada en la población que asiste a atención primaria hace necesario que los clínicos consideren múltiples diagnósticos psiquiátricos por lo cual se limita el uso de los instrumentos mencionados (8).

Instrumentos que cubren un rango de problemas

El PRIME-MD fue diseñado como instrumento diagnóstico para la detección de los trastornos mentales más comunes en atención primaria y población general (12 en total) como trastornos del ánimo, ansiedad, somatomorfos, por consumo de alcohol y trastornos de la conducta alimentaria (2). Esta herramienta se basa en los criterios diagnósticos del DSMIV (11). Ha mostrado ser sensible para las categorías diagnosticas de trastornos del afecto, trastornos de ansiedad, trastornos de conducta alimentaria y alcohol pero en algunos estudios no tiene buenas propiedades psicométricas en la evaluación de los trastornos somatomorfos (1).

Esta es una de las herramientas que cuenta con mayor evidencia en la literatura; es un procedimiento rápido y estandarizado que ha demostrado una sensibilidad del 83%, una especificidad del 88% y un valor predictivo positivo del 80% para el diagnóstico de cualquier enfermedad mental (2,27). Además de sus buenas propiedades psicométricas, otra de las ventajas de este instrumento es que es uno de los pocos existentes para su aplicación en atención primaria que permite la realización de diagnósticos (7,18). Se han descrito algunas limitaciones para clasificar algunos trastornos que no cumplen todos los criterios en su totalidad o se encuentran en periodos inter críticos (28).

El PHQ es una herramienta de autoreporte diseñada a partir del PRIME-MD para su uso en atención primaria. Si bien el PRIME-MD ha demostrado ser efectivo, ha recibido críticas por requerir mucho tiempo para su aplicación en la consulta médica general ya que además del tiempo utilizado por el paciente para contestar el cuestionario autoadministrado requiere en promedio 8,4 minutos adicionales por parte del médico (13,52). Por estos motivos se crea un instrumento más corto, el PHQ (13,52,53). Este y sus subescalas han mostrado buenas propiedades psicométricas (14,20,54).

Cuando se han realizado estudios con la versión en español, se ha comprobado la utilidad de un cuestionario breve (PHQ) para detectar problemas de salud mental en el medio hospitalario (15). La validación y utilidad de la PHQ-9 en el diagnóstico de depresión en pacientes usuarios de atención primaria se ha realizado en países latinoamericanos con buenos resultados, incluyendo Colombia (21,24). Aunque hay autores que señalan que debe utilizarse como tamización y no como diagnostico además de no ser adecuada para establecer gravedad (22,54).

La M-3 Checklist ha demostrado su utilidad como una herramienta válida, eficiente y confiable para el tamización de patologías psiquiátricas comunes en atención primaria: depresión, bipolar, ansiedad y trastorno de estrés postraumático (8). A pesar de esto, deja por fuera otros diagnósticos como los psicóticos, los relacionados con el abuso de sustancias y los mentales orgánicos.

La SDDS-PC es una herramienta que permite identificar depresión mayor, ansiedad generalizada, trastorno de pánico,

trastorno obsesivo compulsivo, abuso y dependencia de sustancias e ideación suicida (33). Dentro de sus ventajas, se encuentra su disponibilidad para ser aplicada y calificada a través de un computador. Como limitaciones, se encuentra que solo cubre trastornos ansiosos y depresivos.

1 Provisional Diagnostic Instrument-4 es un instrumento breve de autoreporte diseñado para identificar en atención primaria casos de ansiedad generalizada, depresión, manía y déficit de atención e hiperactividad dejando por fuera otros diagnósticos (34). La CHAT es una herramienta desarrollada para detectar en atención primaria la presencia de uso de tabaco, alcohol, psicoactivos, ludopatía, depresión, ansiedad, estrés, irritabilidad y trastornos de la conducta alimentaria (35). No incluye los trastornos psicóticos.

Instrumentos para le realización de diagnósticos en dos pasos

Dadas las limitaciones presentadas por algunos de los instrumentos mencionados, se ha propuesto utilizar en atención primaria un método de dos pasos para la detección de diagnósticos psiquiátricos (5). Este modelo propone la aplicación inicial de instrumentos de tamización seguidos de evaluaciones confirmatorias para la realización de un diagnóstico, especialmente cuando se evalúan trastornos depresivos y ansiosos, trastornos de la conducta alimentaria, trastornos relacionados con el consumo de sustancias y trastornos cognitivos (5).

Instrumentos como el PRIME-MD están diseñados de esta manera. Inicialmente el paciente completa un cuestionario de autoreporte con preguntas de tamización posteriormente el médico de atención primaria realiza una entrevista estructurada para los pacientes que puntúan positivo en el primer cuestionario (2,11). Quienes recomiendan la utilización del GHQ-12 y SCL-90 para su uso en atención primaria sugieren que estos instrumentos sean utilizados como un primer paso y complementados con entrevistas diagnosticas (12).

Entrevistas estructuradas

En psiquiatría, las entrevistas estructuradas son el patrón de oro para la realización de diagnósticos y son ampliamente utilizadas en investigación (4). Ejemplos de estas son la Entrevista clínica estructurada para los trastornos del eje I del DSM-IV (SCID-I) y la MINI (4,43,55). La entrevista diagnóstica internacional compuesta (CIDI) es una entrevista estructurada estandarizada creada por la OMS para dar diagnósticos psiquiátricos de acuerdo al CIE 10 y al DSM IV (44,45,56).

Estas entrevistas requieren tiempos largos para su administración y entrenamiento tanto para su realización como para su calificación; por este motivo no han sido adaptadas ampliamente en la práctica clínica de AP (4). Un estudio realizado en Brazil en hospitales psiquiátricos y centros de atención primaria para evaluar la confiabilidad de la CIDI mostro que la entrevista tenía una duración promedio de 2 horas y 30 minutos (44).

La SPIFA es una entrevista que ha mostrado una buena confiabilidad interevaluador para depresión, trastornos de ansiedad y riesgo suicida, aunque en pacientes con trastornos comórbidos la confiabilidad es pobre (46). La duración promedio de la entrevista es de 22 minutos (46).

La Herramienta Mundial para la Evaluación en Salud Mental en Atención Primaria

La Global Mental Health Assesment Tool/Primary Care (GMHAT/PC) es una herramienta computarizada, de entrevista clínica semiestructurada desarrollada para evaluar e identificar los problemas de salud mental en AP (57). El principal diagnóstico deriva del uso de un modelo jerárquico basado en CIE-10. El programa de diagnóstico toma en cuenta la gravedad de los síntomas (moderada a severa). También genera diagnósticos alternativos y estados de comorbilidad con base en la presencia de síntomas de otros trastornos. Además, incluye una evaluación de riesgo de suicidio.

La GMHAT/PC ha demostrado su capacidad para realizar diagnósticos acertados tanto en atención primaria como en otros servicios médicos y psiquiátricos (58,59). Los diferentes estudios de validación llevados a cabo dan cuenta de buenas propiedades psicométricas utilizando como patrón de oro la entrevista clínica por un psiquiatra. Respecto a la presencia o no de un diagnóstico psiquiátrico se han encontrado sensibilidad entre 73 y 94%, y especificidad entre el 92 y 100% (58-63). El tiempo promedio utilizado para la aplicación del GMHAT/PC fue de aproximadamente 15 minutos en todos los estudios (57).

Discusión

Es necesario mejorar las herramientas disponibles para que los médicos que trabajan en atención primaria puedan detectar la presencia de enfermedad mental. Para esto es necesario contar con escalas y herramientas validadas, practicas, fáciles de aplicar y procesar. Actualmente existen múltiples escalas y guías de entrevista en atención primaria en salud mental. Sin embargo, estas tienen limitaciones en la práctica clínica diaria.

Muchas de estas herramientas fueron creadas para realizar investigación, otras requieren gran entrenamiento de quien las aplica y, en su gran mayoría, cubren un rango limitado de síntomas, por ejemplo ansiedad y depresión. Escalas de gran uso clínico para síntomas ansiosos y depresivos permiten evaluar la presencia o ausencia de síntomas más que dar un diagnóstico específico y deja por fuera un espectro amplio de trastornos psiquiátricos como la demencia y la psicosis.

En muchos países del mundo se han implementado estrategias que permiten integrar la atención primaria con la salud mental y se han planteado diversas soluciones a los problemas mencionados (57). Así, además del uso de escalas y guías de entrevista semiestructuradas, se han propuesto métodos asistidos por computadores para facilitar la realización de diagnósticos en atención primaria. Un ejemplo de esta estrategia es la Herramienta Mundial de Evaluación en Salud Mental en Atención Primaria (GMHAT/PC) la cual después de creada en el Reino Unido ha sido utilizada con éxito en sistemas de salud en otros países (64,65).

Los estudios sobre las propiedades psicométricas de esta herramienta presentan resultados positivos que permiten sugerir la puesta en marcha de procesos de evaluación de las propiedades psicométricas del instrumento para aplicarlo en Colombia. Esta entrevista se encuentra actualmente en proceso de ser validada para su uso en el país y otros países de habla hispana.

Este tipo de entrevistas realizadas por computador combinan las ventajas de ser tanto estructuradas como exhaustivas; al mismo tiempo, dejan de ser un procedimiento impersonal como sucede con las escalas de autoreporte (57). La incorporación del examen mental completo puede ayudar a distinguir de forma diferencial los trastornos afectivos, los trastornos del pensamiento y el deterioro cognitivo siendo útiles no solo para los médicos generales, sino para todo el personal que trabaja en atención primaria (66). Aun así, es importante aclarar que, si bien cualquier instrumento de los mencionados es de gran ayuda en la práctica diaria, su propósito no es remplazar el diagnóstico clínico realizado por un psiquiatra (57). Su propósito es el de ayudar a los profesionales que trabajan en atención primaria para reconocer y manejar las necesidades de sus pacientes.

El aporte más importante de este tipo de revisiones es brindar un panorama de los diferentes instrumentos usados actualmente en atención primaria y, al presentarlos de forma comparativa, ayudar al clínico en la toma de decisiones sobre cual utilizar en su práctica habitual. Dentro de las limitaciones de este estudio se puede señalar que, al no haber páginas o buscadores específicos para escalas (como sí ocurre por ejemplo con las guías de práctica clínica), esto hace que puedan existir instrumentos adicionales a los aquí evaluados y que no se hayan podido detectar en la búsqueda.

Conclusión

Es necesario mejorar las herramientas disponibles para que los médicos que trabajan en AP puedan detectar la presencia de enfermedad mental. Por ello, se recomienda el uso de instrumentos que realicen una valoración global del estado mental sobre aquellos que son específicos para un solo trastorno.

Además del uso de escalas y guías de entrevista semiestructuradas, se han propuesto métodos asistidos por computadores para facilitar la realización de diagnósticos en AP. Por ello, es preciso resaltar que, dentro de las herramientas desarrolladas y que han demostrado mayor utilidad, se encuentran la Primary Care Evaluation of Mental Disorders (PRIME-MD), el Patient Health Questionnaire (PHQ) y la Herramienta Mundial de Evaluación en Salud Mental (GMHAT).

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Referencias

1. **Loerch B, Szegedi A, Kohnen R, Benkert O.** The Primary Care Evaluation of Mental Disorders (PRIME-MD), German version: a comparison with the CIDI. J Psychiatr Res. 2000;34:211-20.
2. **Ansseau M, Dierick M, Buntinkx F, Cnockaert P, De Smedt J, Van Den Haute M, et al.** High prevalence of mental disorders in primary care. J Affect Disord. 2004;78:49-55.
3. **Orive M, Padierna JA, Quintana JM, Las-Hayas C, Vrotsou K, Aguirre U.** Detecting depression in medically ill patients: Comparative accuracy of four screening questionnaires and physicians' diagnoses in Spanish population. J Psychosom Res. 2010;69:399-406.
4. **Farvolden P, McBride C, Bagby RM, Ravitz P.** A Web-Based Screening Instrument for Depression and Anxiety Disorders in Primary Care. J Med Internet Res. 2003;5:e23.

5. **Muntingh AD, van der Feltz-Cornelis CM, van Marwijk HW, Spinhoven P, Penninx BW, van Balkom AJ.** Is the beck anxiety inventory a good tool to assess the severity of anxiety? A primary care study in The Netherlands study of depression and anxiety (NESDA). BMC Fam Pract. 2011;12:66.

6. **Staab JP, Evans DL.** A Streamlined Method for Diagnosing Common Psychiatric Disorders in Primary Care. Clin Cornerstone. 2001;3:1-9.

7. **McGrady A, Lynch DJ, Nagel RW, Tamburrino M.** Coherence Between Physician Diagnosis and Patient Self Reports of Anxiety and Depression in Primary Care. J Nerv Ment Dis. 2010;198:420-4.

8. **Romera I, Delgado-Cohen H, Perez T, Caballero L, Gilaberte I.** Factor analysis of the Zung self-rating depression scale in a large sample of patients with major depressive disorder in primary care. BMC Psychiatry. 2008;8:4.

9. **Maizels M, Smitherman TA, Penzien DB.** A review of screening tools for psychiatric comorbidity in headache patients. Headache. 2006;46(Suppl 3):S98-109.

10. **Gaynes BN, DeVeaugh-Geiss J, Weir S, Gu H, MacPherson C, Schulberg HC et al.** Feasibility and diagnostic validity of the M-3 checklist: a brief, self-rated screen for depressive, bipolar, anxiety, and post-traumatic stress disorders in primary care. Ann Fam Med. 2010;8:160-9.

11. **Gache P, Michaud P, Landry U, Accietto C, Arfaoui S, Wenger O et al.** The Alcohol Use Disorders Identification Test (AUDIT) as a Screening Tool for Excessive Drinking in Primary Care: Reliability and Validity of a French Version. Alcohol Clin Exp Res. 2005;29:2001-7.

12. **Mitchell AJ, Meader N, Bird V, Rizzo M.** Clinical recognition and recording of alcohol disorders by clinicians in primary and secondary care: meta-analysis. Br J Psychiatry. 2012;201:93-100.

13. **Avasthi A, Varma SC, Kulhara P, Nehra R, Grover S, Sharma S.** Diagnosis of common mental disorders by using PRIME-MD Patient Health Questionnaire. Indian J Med Res. 2008;127:159-64.

14. **Schmitz N, Kruse J, Heckrath C, Alberti L, Tress W.** Diagnosing mental disorders in primary care: the General Health Questionnaire (GHQ) and the Symptom Check List (SCL-90-R) as screening instruments. Soc Psychiatry Psychiatr Epidemiol. 1999;34:360-6.

15. **Sanchez R, Echeverry J.** Validación de Escalas de Medición en Salud. Revista de Salud Pública. 2004;6:302-18.

16. **Karekla M, Pilipenko N, Feldman J.** Patient Health Questionnaire: Greek language validation and subscale factor structure. Compr Psychiatry. 2012;53:1217-26.

17. **Reuland DS, Cherrington A, Watkins GS, Bradford DW, Blanco RA, Gaynes BN.** Diagnostic accuracy of Spanish language depression-screening instruments. Ann Fam Med. 2009;7:455-62.

18. **Bakker IM, Terluin B, van Marwijk HW, van Mechelen W, Stalman WA.** Test–retest reliability of the PRIME-MD: limitations in diagnosing mental disorders in primary care. Eur J Public Health. 2009;19:303-7.

19. **Cameron IM, Cardy A, Crawford JR, du Toit SW, Hay S, Lawton K et al.** Measuring depression severity in general practice: discriminatory performance of the PHQ-9, HADS-D, and BDI-II. Br J Gen Pract. 2011;61:e419-26.

20. **Delgadillo J, Payne S, Gilbody S, Godfrey C, Gore S, Jessop D et al.** How reliable is depression screening in alcohol and drug users? A validation of brief and ultra-brief questionnaires. J Affect Disord. 2011;134:266-71.

21. **Baader T, Molina JL, Venezian S, Rojas C, Farías R, Fierro-Freixenet C et al.** Validación y utilidad de la encuesta PHQ-9 (Patient Health Questionnaire) en el diagnóstico de depresión en pacientes usuarios de atención primaria en Chile. Revista chilena de neuro-psiquiatría. 2012;50:10-22.

22. **Wittkampf K, van Ravesteijn H, Baas K, van de Hoogen H, Schene A, Bindels P et al.** The accuracy of Patient Health Questionnaire-9 in detecting depression and measuring depression severity in high-risk groups in primary care. Gen Hosp Psychiatry. 2009;31:451-9.

23. **Chishinga N, Kinyanda E, Weiss HA, Patel V, Ayles H, Seedat S.** Validation of brief screening tools for depressive and alcohol use disorders among TB and HIV patients in primary care in Zambia. BMC Psychiatry. 2011;11:75.

24. **Castro-Camacho L, Escobar J, Sáenz-Moncaleano C, Delgado-Barrera L, Aparicio-Turbay S, Molano J, et al.** Salud mental en el hospital general: resultados del Cuestionario de Salud del Paciente (PHQ) en cuatro servicios de atención. Revista Colombiana de Psiquiatría. 2012;41:61-85.

25. **Torres Y, Bareño J, Sierra G, Mejia R, Berbesi D.** Indicadores de situación de riesgo de salud mental población desplazada Colombia. Revista del Observatorio Nacional de Salud Mental. 2011;1:28-38.

26. World Health Organization (WHO). A User's Guide to the self-Reporting Questionnaire (SRQ). Geneva: WHO; 1994.

27. **Rickels MR, Khalid-Khan S, Gallop R, Rickels K.** Assessment of Anxiety and Depression in Primary Care: Value of a Four-Item Questionnaire. J Am Osteopath Assoc. 2009;109:216-9.

28. **Mitchell AJ, Bird V, Rizzo M, Meader N.** Diagnostic validity and added value of the geriatric depression scale for depression in primary care: A meta-analysis of GDS30 and GDS15. J Affect Disord. 2010;125:10-7.

29. **Sorsdahl K, Vythilingum B, Stein DJ.** A screening tool for social anxiety disorder in primary care: data from South Africa. J Nerv Ment Dis. 2012;200:163-6.

30. **Vargas BE, Villamil V, Rodríguez C, Pérez J, Cortés J.** Validación de la escala Kessler 10 (K-10) en la detección de depresión y ansiedad en el primer nivel de atención. Propiedades psicométricas. Salud Mental. 2011;34:323-31.

31. **Fink P, Ewald H, Jensen J, Sørensen L, Engberg M, Holm M et al.** Screening for somatization and hypochondriasis in primary Care and neurological in-patients: a seven-item scale for hypochondriasis and somatization. J Psychosom Res. 1999;46:261-73.

32. **French P, Owens J, Parker S, Dunn G.** Identification of young people in the early stages of psychosis: Validation of a checklist

for use in primary care. Psychiatry Res. 2012 Psychiatry Res. 2012;200:911-6.

33. **Broadhead WE, Leon AC, Weissman MM, Barrett JE, Blacklow RS, Gilbert TT, Keller MB, Olfson M, Higgins ES.** Development and validation of the SDDS-PC screen for multiple mental disorders in primary care. Arch Fam Med. 1995;4:211-9.

34. **Houston JP, Kroenke K, Faries DE, Doebbeling CC, Adler LA, Ahl J, et al.** A Provisional screening instrument for four common mental disorders in adult primary care patients. Psychosomatics. 2011;52:48-55.

35. **Goodyear-Smith F, Coupe NM, Arroll B, Elley CR, Sullivan S, McGill AT.** Case finding of lifestyle and mental health disorders in primary care: validation of the 'CHAT' tool. Br J Gen Pract. 2008;58:26-31.

36. **Humeniuk R, Ali R, Babor T, Souza-Formigoni ML, de Lacerda RB, Ling W, McRee B, Newcombe D, Pal H, Poznyak V, Simon S, Vendetti J.** A randomized controlled trial of a brief intervention for illicit drugs linked to the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) in clients recruited from primary health-care settings in four countries. Addiction. 2012;107:957-66.

37. **Breuer E, Stoloff K, Myer L, Seedat S, Stein DJ, Joska J.** Reliability of the lay adherence counsellor administered substance abuse and mental illness symptoms screener (SAMISS) and the International HIV Dementia Scale (IHDS) in a primary care HIV clinic in Cape Town, South Africa. AIDS Behav. 2012;16:1464-71.

38. **Hill LS, Reid F, Morgan JF, Lacey JH.** SCOFF, the development of an eating disorder screening questionnaire. Int J Eat Disord. 2010;43:344-51.

39. **Smith PC, Schmidt SM, Allensworth-Davies D, Saitz R.** Primary care validation of a single-question alcohol screening test. J Gen Intern Med. 2009;24:783-8.

40. **Davis SM, Whitworth JD, Rickett K.** Clinical inquiries. What are the most practical primary care screens for post-traumatic stress disorder? J Fam Pract. 2009;58:100-1.

41. **Campbell-Sills L, Norman SB, Craske MG, Sullivan G, Lang AJ, Chavira DA, Bystritsky A, Sherbourne C, Roy-Byrne P, Stein MB.** Validation of a brief measure of anxiety-related severity and impairment: the Overall Anxiety Severity and Impairment Scale (OASIS). J Affect Disord. 2009;112:92-101.

42. **Ventevogel P, De Vries G, Scholte WF, Shinwari NR, Faiz H, Nassery R, van den Brink W, Olff M.** Properties of the Hopkins Symptom Checklist-25 (HSCL-25) and the Self-Reporting Questionnaire (SRQ-20) as screening instruments used in primary care in Afghanistan. Soc Psychiatry Psychiatr Epidemiol. 2007;42:328-35.

43. **de Azevedo Marques JM, Zuardi AW.** Validity and applicability of the Mini International Neuropsychiatric Interview administered by family medicine residents in primary health care in Brazil. Gen Hosp Psychiatry. 2008;30:303-10.

44. **Quintana MI, Andreoli SB, Jorge MR, Gastal FL, Miranda CT.** The reliability of the Brazilian version of the Composite International Diagnostic Interview (CIDI2.1). Braz J Med Biol Res. 2004;37:1739-45.

45. **Kessler RC, Calabrese JR, Farley PA, Gruber MJ, Jewell MA, Katon W, et al.** Composite International Diagnostic Interview screening scales for DSM-IV anxiety and mood disorders. Psychol Med. 2012;18:1-13.

46. **Dahl AA, Krüger MB, Dahl NH, Karlsson H, VonKnorring L, Stordal E.** SPIFA-A presentation of the Structured Psychiatric Interview for General Practice. Nord J Psychiatry. 2009;63:443-53.

47. **Pirani A, Brodaty H, Martini E, Zaccherini D, Neviani F, Neri M.** The validation of the Italian version of the GPCOG (GPCOG-It): a contribution to cross-national implementation of a screening test for dementia in general practice. Int Psychogeriatr. 2010;22:82-90

48. **Milne A, Culverwell A, Guss R, Tuppen J, Whelton R.** Screening for dementia in primary care: a review of the use, efficacy and quality of measures. Int Psychogeriatr. 2008;20:911-26.

49. **Ladera V, Perea MV.** Rastreo cognitivo en demencia. Revista Neuropsicología, Neuropsiquiatría y Neurociencias. 2012;12:133-50.

50. **Park MH, Lee DH, Lee HJ, Song MS.** The PHC-cog: a brief cognitive function screening test for the elderly. Neurol India. 2005;53:60-4.

51. **Kirkcaldy RD, Tynes LL.** Depression Screening in a VA Primary Care Clinic. Psychiatr Serv. 2006;57:1694-6.

52. **Spitzer RL, Kroenke K, Williams JB.** Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. Primary Care Evaluation of Mental Disorders. Patient Health Questionnaire. JAMA. 1999;282:1737-44.

53. **Kroenke K, Spitzer RL, Williams JB.** The PHQ-9: validity of a brief depression severity measure. J Gen Intern Med. 2001;16:606-13.

54. **Amoran O, Ogunsemi O, Lasebikan V.** Assessment of mental disorders using the patient health questionnaire as a general screening tool in western Nigeria: A community-based study. J Neurosci Rural Pract. 2012;3:6-11.

55. **Oslin DW, Ross J, Sayers S, Murphy J, Kane V, Katz IR.** Screening, Assessment, and Management of Depression in VA Primary Care Clinics The Behavioral Health Laboratory. J Gen Intern Med. 2006;21:46-50.

56. **Goldberg DP, Prisciandaro JJ, Williams P.** The primary health care version of ICD-11: the detection of common mental disorders in general medical settings. Gen Hosp Psychiatry. 2012;34(6):665-70.

57. **Sharma VK, Copeland JR, Krishna M, Lepping P, Bowen M.** Use of the Global Mental Health Assessment Tool (GMHAT/PC) in general health care setting. En prensa.

58. **Sharma VK, Jagawat S, Midha A, Jain A, Tambi A, Mangwani LK, et al.** The Global Mental Health Assessment Tool-validation in Hindi: A validity and feasibility study. Indian J Psychiatry. 2010;52:316-9.

59. **Sharma VK, Durrani S, Sawa M, Copeland JR, Abou-Saleh M, Lane S, et al.** Arabic version of the Global Mental Health Assessment Tool—Primary Care version (GMHAT/PC): a validity and feasibility study. EMHJ. 2013;19:905-8.

60. **Sharma VK, Lepping P, Cummings AG, Copeland JR, Parhee R, Mottram P.** The Global Mental Health Assessment Tool-Primary Care Version (GMHAT/PC). Development, reliability and validity. World Psychiatry. 2004;3:115-19.

61. **Sharma VK, Lepping P, Krishna M, Durrani S, Copeland JR, Mottram P, et al.** Mental health diagnosis by nurses using the Global Mental Health Assessment Tool: a validity and feasibility study. Br J Gen Pract. 2008;58:411-6.

62. **Krishna M, Lepping P, Sharma VK, Copeland JR, Lockwood L, Williams M.** Epidemiological and clinical use of GMHAT-PC (Global Mental Health assessment tool-primary care) in cardiac patients. Clin Pract Epidemiol Ment Health. 2009;5:7.

63. **Sharma VK, Krishna M, Lepping P, Palanisamy V, Kallumpuram SV, Mottram P et al.** Validation and feasibility of the Global Mental Health Assessment Tool--Primary Care Version (GMHAT/PC) in older adults. Age Ageing. 2010;39:496-9.

64. **Sharma VK, Copeland JR.** Detecting mental disorders in primary care. Ment Health Fam Med. 2009;6:11-3.

65. **Sharma BB, Singh S, Sharma VK, Choudhary M, Singh V, Lane S, et al.** Psychiatric morbidity in chronic respiratory disorders in an Indian service using GMHAT/PC. Gen Hosp Psychiatry. 2013;35:39-44.

66. **Snyderman D, Rovner B.** Mental Status Examination in Primary Care: A Review. Am Fam Physician. 2009;80:809-14.

Appendix 13 Published paper (translation)

Critical revision of Mental health Assessment Tools in Primary Care

Summary

Background. There are many instruments to use in primary care in Mental Health. However, the overall limitations found are that some instruments were developed specifically for research purposes and scales cover a limited range of symptoms and mental disorders like anxiety and depression. Scales used in clinical settings for anxiety and depressive symptoms usually assess the presence or absence of symptoms rather than give a specific diagnosis and leaves out a broad spectrum of psychiatric disorders such as dementia and psychosis. For this reasons, multiple alternatives to overcome these problems have been proposed worldwide.

Objective. To review in a critical way the instruments used in primary care.

Materials and methods. Literature review.

Results. Among the tools developed and used are the Primary Care Evaluation of Mental Disorders (PRIME-MD) and the Patient Health Questionnaire (PHQ). Another instrument is the Global Mental Health Assessment Tool (GMHAT). This tool allows broad screening and diagnosis of mental health problems for people with little training in psychiatry and in a short time.

Conclusion. Short Instruments that perform an overall assessment of the mental state are preferred over those that are specific to a single disorder.

Key words: Primary Care, Mental Health, Psychiatric Status Rating Scales, Diagnosis, Straining (MeSH).

Introduction

Health services in primary care lack skills to detect and treat people with mental health problems (V. K. Sharma & Copeland, 2009). The vast majority of times GPs are the first line of contacts with those who suffer from a mental illness (Loerch et al., 2000). For this reason it is important to establish systems to help primary care doctors to identify people with mental health problems at the earliest opportunity and to provide the most appropriate intervention.

Although only 5.4% of patients consult for a psychiatric reason in health care settings, data exists to show that 1 in 4 people who come into contact with a health service has a mental disorder meeting the ICD10 criteria (Ansseau et al., 2004; Loerch et al., 2000). General practitioners therefore fail to detect or treat between 50% and 75% of the cases they routinely see in their practice (Ansseau et al., 2004; Loerch et al., 2000).

Of the mental disorders found in primary care services most prevalent are affective disorders (31%), anxiety disorders (19%) and somatoform disorders (18%) (Ansseau et al., 2004). Depressive disorder is the second most common chronic disease in primary care (Farvolden et al., 2003; Orive et al., 2010). Approximately 12% of patients treated in general settings have depression (Orive et al., 2010). Despite this, only half of these patients are recognised by general practitioners.

Both patients with depression and anxiety can present with somatic symptoms (McGrady et al., 2010; Muntingh et al., 2011; Orive et al., 2010; Staab & Evans, 2001). In the case of depressive patients, 2 out of 3 reported somatic symptoms as a main problem in primary care (Romera et al., 2008). This often leads to unnecessary and extensive screening laboratory tests for physical illness, along with inappropriate drug treatments, and referral from one service to the other. This results in turning their anxiety and depression in to complex chronic conditions (Maizels et al., 2006).

Other conditions such as bipolar disorder have a prevalence of 3.9% in the community, but could have as high as 9.8% prevalence in primary care (Gaynes et al., 2010). Similarly, alcohol related problems are also not easily recognised by the primary care teams even though alcohol abuse and dependence is found in 10% of their population (Ansseau et al., 2004; Gache et al., 2005). This could be due to many reasons including lack of training, poor awareness of available scales and generally negative attitudes in asking question about alcohol consumption (Gache et al., 2005). In a study, the diagnostic sensitivity of general practitioners to identify alcohol related disorders was 41.7% but only 27.3% of cases were recorded in their medical history (Mitchell et al., 2012). Substance abuse is present in 1 out of 5 patient in general medical contexts but only 20% of them were given screening questions for detection (Muntingh et al., 2011).

The main obstacles to the recognition of mental disorders by primary care physicians are lack of knowledge about the diagnostic criteria, unfamiliarity about the right questions to evaluate mental state and time constraints inherent to clinical settings overload (Avasthi et al., 2008; Schmitz et al., 1999).

For the above reasons, it is important that professionals working in primary care have short and reliable tools that enable them to identify and manage patients with mental illness. There are different ways one can gather information on mental health. Scales are measuring instruments consist of items that measure phenomena that are not directly observable (Sanchez & Echeverry, 2004). The structured interview is a series of questions or topics which evaluate different variables. The cognitive tests consist of items that assess functions such as memory, language, praxis, and orientation.

The selection of an appropriate instrument or scale for a specific evaluation is very important. One has to take account of characteristics of the population to which it will be applied, its psychometric properties (validity, sensitivity and specificity), the time taken as well as ease in its application and its relevance and usefulness (Orive et al., 2010; Sanchez & Echeverry, 2004).

Accurate internationally standardised criteria based diagnosis is essential for an appropriate evidence based clinical intervention as well as for an adequate epidemiological monitoring (Karekla et al., 2012). The lack of a proper diagnosis can lead to inappropriate treatment(Farvolden et al., 2003). The aim of this paper is to critically review the instruments, scales and tools used for psychiatric assessment in primary care and identify their limitations.

Methodology

The review was conducted by a literature search in PUBMED and SCIELO looking for instruments, scales and tools used for adult psychiatric evaluation in primary health care. The search was performed using the MeSH terms "Primary Health Care", "Mental Disorders / diagnosis" "Mass

Screening" and "Questionnaires". The search selected studies published in English and Spanish, in adults, with no date restriction. All the references were reviewed cited by the articles and identified additional references that were not initially detected. The articles were reviewed and selected those which specified that the instruments were used in primary care and provided their description and psychometric properties.

Results

In total 325 papers were found. 197 were excluded because they did not describe instruments, were not specific for primary care for mental health or population were children and adolescents. In total 128 references were found about 40 instruments. Of these 33 are scales, 3 structured interviews and 4 cognitive tests. A summary of the instruments and psychometric properties found are showed in Tables 1, 2 and 3.

Table 1. Scales for psychiatric assessment in Primary Care

Scale		Sensitivity %	Specificity %
Primary Care Evaluation of Mental Disorders PRIME-MD	Self-report/ structured interview	72-81	66- 100
Depression in the Medically Ill-18 DMI-18	Self-report	89-97	59-83
Beck Depression Inventory for Primary Care BDI PC	Self-report	74-83	72-80
Hospital Anxiety and Depression Scale HADS-D	Self-report	74-86	75-76
Patient Health Questionnaire PHQ-9	Self-report	68-93	75-96
Web-Based Depression and Anxiety Test WB-DAT	Self-report (computer assisted)	63-95	87-97
My Mood Monitor M-3 checklist	Self-report	82-88	70-80
Alcohol Use Disorders Identification Test AUDIT	Self-report	55-94	79-98
General Health Questionnaire GHQ	Self-report	32-68	65-93
Symptom Check-List SCL-90-R	Self-report	39-75	59-95
Patient Health Questionnaire PHQ	Self-report	75-87	88-90
Self-Report Questionnaire SRQ	Self-report	63-90	44-95
Four-Item Questionnaire	Self-report	78	95

Centre for Epidemiologic Studies-Depression scale CES-D	Self-report	73-92	70-74
GDS 15	Self-report	76-82	64-98
GDS 30	Self-report	77	65
Edinburgh Postnatal Depression Scale EPDS	Self-report	72-89	86-95
Postpartum Depression Screening Scale PDSS	Self-report	78	85
Social Anxiety Screening Questionnaire	Self-report	84	67
Kessler 10 K-10	Self-report	72-78	73-79
Whiteley-7 scale	Self-report	71-100	62-65
Early Detection Primary Care Checklist PCCL	Checklist completed by primary care practitioners	89	60
Symptom Driven Diagnostic System for Primary Care SDDS-PC	Self-report screening questionnaire/ diagnostic interview / longitudinal tracking form (computer assisted)	43-90	54-98
Provisional Diagnostic Instrument-4	Self-report	80-83	73-82
Case-finding and Help Assessment Tool CHAT	Self-report	26-96	40-97
Alcohol, Smoking and Substance Involvement Screening Test ASSIST	Self-report	54-97	50-96
Substance abuse and mental illness symptoms screener SAMISS	Self-report	86-95	49- 75
International HIV Dementia Scale IHDS	Self-report	53-86	32-80
Eating disorder screening questionnaire SCOFF	Self-report	84.6	89.6
single-item screening test for unhealthy alcohol use	single-item screening test	81.8	79.3
4-item Primary Care Post-Traumatic Stress Disorder	Self-report	78	87

screen PC-PTSD			
Overall Anxiety Severity and Impairment Scale OASIS	Self-report	89	71
Hopkins Symptom Checklist-25 HSCL-25	Self-report	89	60-73

Table 2. Interviews for psychiatric assessment in Primary Care

Interview	Sensitivity %	Specificity %
Mini International Neuropsychiatric Interview MINI	75-92	90-99
Composite International Diagnostic Interview CIDI	68-80	90-98
Structured Psychiatric Interview for General Practice SPIFA	NA	NA

Table 3. Cognitive tests for psychiatric assessment in Primary Care

Cognitive test		Sensitivity %	Specificity %
General Practitioner Cognitive Assessment of Cognition GPCOG	Patient test/ informant interview	82	92
Memory Impairment Screen MIS	Cognitive test	80-87	96
Mini-Cognitive Assessment Instrument Mini-Cog	Cognitive test	71-79	89
Public Health Centre Cognitive Dysfunction Test PHC-cog	Patient test/ informant interview	96	82

Despite the wide variety of tools described in the literature they present some practical barriers for their application in primary care. The number of limitations found are: Instruments that are excessively lengthy for clinical interviews are not designed for their use in primary care; most scales cover a limited range of symptoms and mental disorders; some instruments were developed specific for research purposes; some scales are specific to certain age groups and others require the more than one scale to reach a psychiatric diagnosis. Some examples are presented below.

Instruments for detecting symptoms

Some scales are designed for a broad screening of problems and symptoms. Examples of these are the GHQ and the SCL-90 (Schmitz et al., 1999). The GHQ is a self-report instrument that allows

screening of non-psychotic psychiatric disorders. It consists of a series of questions about have experienced some symptom or behaviour recently (Schmitz et al., 1999). The SCL-90 is a symptom inventory designed to cover a wide range of psychological problems. Responses were combined into nine symptom dimensions: somatization, obsessive-compulsive, interpersonal sensitivity, hostility, depression, anxiety, paranoid ideation, phobic anxiety and psychoticism (Schmitz et al., 1999). These do not allow specific diagnoses according to operationalised diagnostic systems such as the DSM or ICD 10 and only indicate the presence or absence of symptoms (Loerch et al., 2000; Schmitz et al., 1999).

The National Mental Health Centre in Colombia recommends the application of the SRQ for primary mental health care but notes that the ratings for this questionnaire are not universally applicable (de Galvis et al., 2012). This instrument, developed by WHO is sensitive for the identification of mental disorders in general medical services in many countries where it is applied (World Health Organization, 1994). This instrument is effective to detect the presence of mental disorders and psychotic disorders (World Health Organization, 1994). Despite this, the instrument covers only very broad categories that make it difficult for general practitioner to be specific about their treatment.

Instruments that cover a limited range of mental health problems

As depressive disorder is the most common psychiatric diagnosis in primary care the vast majority of the scales have been developed for the diagnosis of depression (Kirkcaldy & Tynes, 2006). Several tools are available to detect depression in the medically ill people in primary care: the depression subscale of the Hospital Anxiety and Depression Scale (HADS-D), the Beck Depression Inventory for Primary Care (BDI-PC), the Patient Health Questionnaire-9 (PHQ-9), the scale Depression in the Medically Ill-18 (MD-18), and the short version of DMI-18 (MD-10)(Cameron et al., 2011; Orive et al., 2010; Rickels et al., 2009). All these instruments are generally recommended for the screening and identification of depression (Orive et al., 2010).

The Zung Depression Scale and the Centre for Epidemiologic Studies (CES-D) have also proved to be useful in primary care (Chishinga et al., 2011; Reuland et al., 2009). Some scales are designed for geriatric depression diagnosis for example, GDS15 (Mitchell et al., 2010). The Spanish versions of these scales based on their validity studies led to doubtful recommendations of the CES-D and the PRIME MD 9 and version of the PRIME MD. The specificity was rather less than satisfactory (Reuland et al., 2009).

The above scales detect depression and none of them detect mania. This may lead to missing patients with bi-polar disorder. In these cases a prescription of an antidepressant can increase the risk of causing a manic, hypomanic or mixed episode (Romera et al., 2008).

There are also scales designed to detect anxiety in primary care. Some of these are the Social Anxiety Screening Questionnaire (Sorsdahl et al., 2012), the Overall Anxiety Severity and Impairment Scale OASIS (Campbell-Sills et al., 2009) and the K-10, which has been validated and used in many Spanish speaking countries (T. Vargas et al., 2011).

Screening tools such CAGE, AUDIT and the Michigan Alcoholism Screening Test focus only on alcohol dependence (Chishinga et al., 2011; Gache et al., 2005). Additional tools are therefore needed for other problems (Chishinga et al., 2011; Gache et al., 2005). Other specific instruments to assess

substance use include the ASSIST (Humeniuk et al., 2012), the SAMISS (Breuer et al., 2012) and the single-item screening test for unhealthy alcohol-use (Smith et al., 2009).

The Whiteley scale shows good psychometric properties in primary care but its use is limited to the diagnoses of somatization and hypochondriasis (Fink et al., 1999). Scales as the Primary Care Checklist (PCCL) have been developed as tools for quick and easy use in primary care to identify early stages of psychosis (French et al., 2012). The assessment instruments for organic mental disorders are the GPCOG (Milne et al., 2008; Pirani et al., 2010), MIS(Ladera V, 2012; Milne et al., 2008) , the Mini-Cog(Ladera V, 2012; Milne et al., 2008) and the PHC-cog (Park et al., 2005). Its use is limited to patients with suspected some type of cognitive impairment.

In summary, the extensive psychiatric morbidity found in the population attending primary care clinicians makes it necessary to use a tool that covers whole range of psychiatric diagnoses. These instruments therefore have some limited use in routine clinical care (Romera et al., 2008).

Instruments that cover a broad range of mental health problems

The Primary Care Evaluation of Mental Disorders (PRIME-MD) was designed as a diagnostic tool for the detection of the most common mental disorders in primary care and general population: mood disorders, anxiety, somatoform, alcohol use and eating disorders (Loerch et al., 2000). This tool is based on the DSM IV diagnostic criteria (Avasthi et al., 2008). It has been showed to be sensitive (0.67 ± 0.80) for the diagnostic categories of mood disorders, anxiety disorders, eating disorders and alcohol but not so for somatoform disorders (Loerch et al., 2000).

This is one of the instruments with a sensitivity of 83%, a specificity of 88% and a positive predictive value of 80% for the diagnosis of any mental illness (Loerch et al., 2000; Reuland et al., 2009). Additional advantage of this instrument is that it assists in arriving on clinical diagnosis (Bakker et al., 2009; Spitzer et al., 1999). The main limitations are that it doesn't include all the diagnoses or patients that are in remission (Bakker et al., 2009).

The Patient Health Questionnaire (PHQ) is a self-report tool derived from the PRIME-MD for use in primary care. Although the PRIME-MD has been proven to be useful, it is time consuming when fully implemented in the general medical consultation: as well as the time used by the patient to answer the self-administered questionnaire requires on average 8.4 additional minutes by the physician (Avasthi et al., 2008; Spitzer et al., 1999). For this reason its shorter version was developed (Avasthi et al., 2008; Kroenke et al., 2001; Spitzer et al., 1999). The PHQ and its subscales have demonstrated good psychometric properties (Castro-Camacho et al., 2012; Karekla et al., 2012; Kroenke et al., 2001).

Its Spanish version has proven useful to detect mental health problems in hospitals (Baader M et al., 2012). Validation and utility of the PHQ-9 in the diagnosis of depression in primary care patients was carried out in Latin American countries including Colombia with good results (Baader M et al., 2012; Castro-Camacho et al., 2012). Some authors suggest that should be used for screening and not to make diagnosis; they also claim that this tool is not adequate to establish severity (Amoran et al., 2012; Wittkampf et al., 2009).

The M-3 Checklist has proven to be useful as a valid, efficient and reliable tool for screening common psychiatric disorders in primary care: depression, bipolar, anxiety and post-traumatic stress disorder

(Gaynes et al., 2010). This however leaves out other diagnoses such as psychosis, substance abuse and organic disorders.

The Symptom-Driven Diagnostic System for Primary Care (SDDS-PC) is a tool to identify major depression, generalised anxiety disorder, panic disorder, obsessive compulsive disorder, substance abuse and dependence and suicidal ideation (Broadhead et al., 1995). Being computer assisted programme is an advantage whereas inclusion of only anxiety and depression is a significant limitation.

The Provisional Diagnostic Instrument-4 is a brief self-report instrument designed to identify cases of generalised anxiety, depression, mania and ADHD (Houston et al., 2011). The Case-finding and Help Assessment Tool (CHAT) is a tool to detect the presence in primary care of alcohol use, psychoactive drugs use, gambling, depression, anxiety, stress, irritability and eating behaviour disorders (Goodyear-Smith et al., 2008).

2-step method: screening questions followed by a confirmatory evaluation.

Given the limitations of some of the instruments, it has been proposed to use in primary care a 2-step method for the detection of psychiatric diagnoses (Staab & Evans, 2001). This model proposes the initial application of screening instruments followed by confirmatory assessments for making a diagnosis, especially when assessing depression and anxiety disorders, eating behaviour disorders, disorders related to substance use and cognitive disorders(Staab & Evans, 2001).

PRIME-MD is designed in this manner. Initially the patient completes a questionnaire with self-report screening questions and then the primary care physician performed a structured interview for patients who score positive on the first questionnaire (Avasthi et al., 2008; Loerch et al., 2000). Those who recommend the use of the GHQ-12 and SCL-90 in primary care suggest that these instruments are better used as a first step and supplemented with diagnostic interviews (Schmitz et al., 1999).

Structured Interviews

In psychiatry, structured interviews are the gold standard for diagnostic studies and are widely used in research (Farvolden et al., 2003). Examples of these are the Structured Clinical Interview for Axis I Disorders DSM-IV (SCID-I) and MINI (de Azevedo Marques & Zuardi, 2008; Oslin et al., 2006; Quintana et al., 2004). The Composite International Diagnostic Interview (CIDI) is a standardised structured interview developed by WHO to give psychiatric diagnoses according to ICD-10 and DSM IV (Goldberg et al., 2012; Kessler et al., 2013; Quintana et al., 2004).

These interviews require longer time for administration. They also require training both for implementation and for its rating. For this reasons they have not been adapted widely in clinical practice in Primary Care (Staab & Evans, 2001). A study in psychiatric hospitals and primary health centres in Brazil to assess the reliability of the CIDI showed that the interview had an average duration of 2 hours and 30 minutes (Quintana et al., 2004).

The SPIFA is an interview that has showed good inter-rater reliability for depression, anxiety disorders and suicide risk; even in patients with comorbid reliability is poor (Dahl et al., 2009). The average length of the interview is 22 minutes (Dahl et al., 2009).

Global Mental Health Assessment Tool

The GMHAT/PC is a computerised, semi-structured clinical interview to assess and identify mental disorders in primary care (C. J. Sharma VK, Krishna M, Lepping P, Bowen M, 2013). This tool is comprehensive and easy-to-administer (B. B. Sharma et al., 2013). The main computer diagnosis is derived using a hierarchical model and designed around ICD-10. The diagnostic programme takes account of severity of symptoms (moderate to severe). It also generates alternative diagnoses based on presence of symptoms of other disorders.

Various studies have been dedicated to assess the psychometric properties of the tool showing results allow recommending its use in different populations. The GMHAT/PC has been proven to be useful to make accurate diagnosis in different settings and with different professions(C. J. Sharma VK, Krishna M, Lepping P, Bowen M, 2013). Regarding the presence or not of psychiatric diagnosis studies found sensitivity between 73 and 94 % and specificity between 92 and 100 %. The average time taken for the implementation of GMHAT / PC was about 15 minutes in all studies.

Discussion

It is necessary to improve the skills of GP to detect mental illness in their clinical practice. This could possibly be achieved by training GPs using validated clinical tools that are practical and easy to apply and rate in their routine practice.

At present, there are number of instruments and interviews available to be used in primary care mental health. However, they have limitations in day to day clinical practice. Some of them are created for research purposes; others are either time consuming or cover a limited range of symptoms, such as anxiety and depression. Some scales are very useful to assess the presence or absence of symptoms without giving a specific diagnosis. Most of them leave out a number of psychiatric disorders such as dementia and psychosis.

In many countries around the world, not only strategies to integrate primary care with mental health have been implemented, but also solutions to the already addressed problems (57). Thus, besides the use of scales and semi-structured interview guides, computer-aided methods have been proposed to facilitate the implementation of diagnoses in primary care. An example of this strategy is the Global Mental Health Assessment Tool in Primary Care (GMHAT/PC), which after being developed in the UK has been successfully used in health systems in other countries (64, 65).

Studies on the psychometric properties of this tool have demonstrated positive results that allow us to suggest that the implementation of evaluation processes concerning the psychometric properties of this instrument can be applied in Colombia. With that in mind, it is important to add that this interview is currently in the process of being validated for use in Colombia and other Spanish-speaking countries.

This type of computer-based interviews combine the advantages of being both structured and exhaustive, albeit at the same time they are no longer an impersonal procedure as happens self-report scales (57). The incorporation of a full mental examination can help in distinguishing potential affective disorders, thought disorders and cognitive impairment, which would be useful not only for general practitioners, but for all staff working in primary care (66). Still, it is important to clarify that while any instrument previously stated is helpful in daily practice, its purpose is not to replace the

clinical diagnosis administered by a psychiatrist (57). Indeed, its purpose is to help professionals working in primary care to recognize and address the needs of their patients.

The most important contribution of this type of review is to provide an overview of the various instruments currently used in primary care, and after being contrasted with one another, assist the GP in making decisions about what instrument to use in his or her practice. With regards to the limitations of this study it can be noted that, in the absence of search engines or specific websites for scales (as happens for example with clinical practice guidelines), this means that there may be additional instruments, apart from those examined herein and they were not, potentially, detected in the search.

Conclusion

It is necessary to improve the currently available tools as doctors working in primary care would be more capable of detecting the presence of mental illnesses. Therefore, the use of instruments that conduct an overall assessment of the mental state are rather preferred than those that are specifically designed for a single disorder.

Besides the use of scales and semi-structured interview guides, computer-aided methods have been proposed to facilitate the implementation of diagnoses in primary care. Therefore, it should be noted that, within developed and most useful tools are, we find the Primary Care Evaluation of Mental Disorders (PRIME-MD), Patient Health Questionnaire (PHQ) and the Global Mental Health Assessment Tool (GMHAT).

Interest conflict

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Appendix 14 Published paper 2

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Keywords: GMHAT; Mental health assessment; Primary care mental health; Psychiatric diagnosis.

The Global Mental Health Assessment Tool Primary Care and General Health Setting Version (GMHAT/PC) – Spanish version: A validity and feasibility study

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ABSTRACT – *Background and Objectives:* The study aims to assess the feasibility and the level of agreement between the Spanish version GMHAT/PC diagnosis and psychiatrists' ICD-10 based clinical diagnosis.

Methods: Participants in the study ranged from those who were in remission to others who had different mental illnesses. They were recruited from inpatient and outpatient mental health settings. All consecutive patients were interviewed using Spanish version of GMHAT/PC and they were assessed independently by psychiatrists to in order to get their ICD-10 based diagnosis.

Results: Two hundred ninety-nine patients participated in the study. The mean duration of interview was 12.5 minutes. There is an acceptable to good level of agreement between the GP's (GMHAT/PC) diagnoses and the psychiatrists' (clinical) diagnoses of any mental illness, Kappa 0.58 95% C.I (0.46, 0.72). There is good level of sensitivity (81%) and specificity (92%), with GPs correctly identifying 242 out of the 250 participants diagnosed with mental illness and 27 out of 35 of those without.

Conclusions: The finding of the study suggest that GMHAT/PC Spanish version used by GPs detected mental disorders accurately and it was feasible to use GMHAT/PC (Spanish version) in Latin America settings.

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Introduction

The model of providing services for mental illness through primary health care has been recognized by the health authorities of different countries as well as the WHO. In Latin America, the vast majority of people with mental health problems have their initial contact with primary care physicians. Therefore, it is important to establish systems to help doctors in identifying people with mental health problems at the earliest opportunity and provide appropriate interventions. The GMHAT/PC (Global Mental Health Assessment Tool Primary Care and General Health Setting Version) appears promising for this purpose showing adequate levels of sensitivity and specificity in different countries where it has been evaluated[1,2].

Some people may argue that every country has to create its own assessment methods or instruments taking account of cultural and language differences. Measures of psychopathological symptoms leading to a diagnosis have been especially criticised for their universal application[3]. They resist using other internationally accepted tools for that reason. However all cross-cultural studies using internationally accepted diagnostic methods such as SCAN, CIDI or MINI found that these diagnostic tools accurately detect mental illness in all cultures[4-6]. There may be variations in prevalence of mental disorders in different countries. In a transcultural study carried out by the WHO in the primary care attenders of 14 different countries using the same diagnostic criteria by applying the CIDI[6] found that the overall prevalence rate of mental illness meeting ICD-10 criteria was 24%. It however ranged from a high of 52.5% in Santiago de Chile to a low 7.3% in Shanghai[6].

An international instrument taking account of cultural and language sensitivities, following a properly carried out validation in that culture, could easily be used in the respective country[7]. To create a new tool is time consuming and expensive. That has to go through the same rigorous validation process in any case. It is therefore sensible to translate, adapt and validate an existing international tool, especially in low to middle income countries. The added advantage is that using the same tools gives useful data and information for cross-cultural and international comparisons. International data based on studies using the instrument also help in establishing the robustness of its psychometric properties.

Computer-assisted semi-structured clinical interview tools such as GMHAT/PC are not validated in Colombia and Latin America so far. Most tools that are used so far have some validity and most of them are paper based rating scales or interview schedules that had been used for research studies. GMHAT/PC on the other hand is primarily developed for clinical use. It has facility to describe the problems reported by patient, as well as recording and rating symptoms using practitioner's clinical judgement based on all the information available to him. The process of clinical assessment using GMHAT/PC is therefore very close to what is ideally expected of primary care health worker. The added advantage of getting the output in a document form with descriptive details, measurement of symptom groups and all diagnostic possibilities makes it some way ahead of all other tools available so far. It is therefore useful to translate adapt and validate GMHAT/PC to assist in providing ICD-10 based diagnosis in day to day practice in primary care and general health setting.

The study aims to assess the feasibility of using a computer assisted diagnostic interview by GPs and to examine the level of agreement between the Spanish version GMHAT/PC diagnosis and psychiatrists' ICD-10 based clinical diagnosis.

Methods

First, it was necessary to establish a proper and clinically relevant Spanish translation of the GMHAT/PC. The English version was translated into Spanish by a clinician who was fluent in both languages. The translated version was then reviewed in a meeting with a member of the GMHAT/PC team, the principal investigator and an experienced Spanish psychiatrist working in England. In that meetings the GMHAT/PC Spanish questions were constructed in the way that they were easily understood by patients both in Latin America Spanish speaking countries as well as in Spain. This was important to overcome country specific differences as we found that some questions needed major revision. It was necessary to retain and adjust some phrases so that Spanish GMHAT/PC can easily be used in Colombia as well as in Spain. The team compared the back translation (from Spanish to English) with the original GMHAT/PC questions and made some further necessary alterations to make the final version.

The validation study included participants ranging from those who were in remission to having symptoms of severe mental illness. They were recruited from inpatient and outpatient mental health settings. Those in the mental health setting were expected to have a wide range of psychiatric diagnoses (anxiety disorders, depression, psychosis, bipolar affective disorder, organic mental disorders, and other diagnosis). The study aimed to have approximately 50 patients with each of these diagnoses to form a sample of around 300 patients.

The study was carried out in Colombia. Patients were interviewed by GPs using GMHAT / PC. They had a full training prior to carrying out study interviews. All Patients (participants) were interviewed independently by psychiatrists with a good deal of clinical experience who were unaware of the GMHAT/PC diagnoses. They made ICD-10 based clinical diagnosis. The GMHAT/PC diagnosis and the psychiatrists' ICD-10 based clinical diagnosis were compared to examine the agreement.

GMHAT/PC

The GMHAT/PC is a computerized clinical assessment tool developed to assess and identify mental health problems in primary care.

The first screen is for patient information and administration of the program. The introductory screens facilitate inputting of descriptive information in the following fields: presenting symptoms, and relevant past, family, and personal problems.

The following screens consist of a series of questions leading to a comprehensive yet quick mental state assessment focusing sequentially on the following symptoms or problems: worries; anxiety and panic attacks; concentration; depressed mood, including suicidal risk; sleep; appetite; eating disorders; hypochondriasis; obsessions and compulsions; phobia; mania/hypomania; thought disorder; psychotic symptoms(delusions and hallucinations); disorientation; memory impairment; alcohol misuse; drug misuse; personality problems; stressors. One question at a time appears from these respective subsections. The questions proceed in clinical order along a tree-branch structure. For each of the major clinical disorders there are one or two screening questions. The interview moves on to the next subsection, if the patient does not have symptoms based on the screening items of a subsection.

At the end of the interview the screen asks to put the interviewer's details and the clini-

cal diagnosis. The screen then proceeds to a menu showing the following items: a) rating scores and computer diagnosis; b) assessment and c) referral letter.

The main symptom groups on which the rating scores are based are anxiety, depression, concentration, eating disorder, hypochondriasis, phobias, obsessions, mania, psychosis, memory impairment and disorientation. In addition, there are sections for alcohol and other drug misuse, stressful events and personality difficulties.

The main computer diagnosis is derived using a hierarchical model and designed around ICD-10. The diagnostic program takes account of severity of symptoms (moderate to severe). It also generates alternative diagnosis based on presence of symptoms of other disorders.

Various studies have been dedicated to assess the psychometric properties of the tool showing results allow recommending its use in different populations. The GMHAT/PC has been proven to be useful to make accurate diagnosis in different settings and with different professions[2]. GMHAT/PC-based diagnoses showed consistently good agreement with International Classification of Diseases, 10th Revision (ICD-10)-based clinical diagnoses made by psychiatrists in various studies[8]. It also shows reliability and validity among different psychiatrists using HADS scores as a comparator[1].

Results

Two hundred ninety-nine patients participated in the study, 162 (54.18%) males and 137 (45.81%) females in the age range of 14-78 (median 36.03, Standard Deviation 14.16). There was no significance difference between the gender groups with regards to age or time taken to complete GMHAT. The interviews were carried out at three mental health institutions; in total 55 (18.39%) were outpatients and 244 (81.6%) inpatients. All patients were interviewed independently by seven psychiatrists with a good deal of clinical experience.

The overall mean time taken to administer GMHAT was 12.5 min, Standard Deviation 9.98 (range 3-36 min). None of the patients declined their consent to participate in the study.

Inter-rater reliability

In this study, the inter-rater reliability was established by ratings of video recorded interviews. Two psychiatrists' ratings were taken as the gold standard. The prospective GMHAT/PC interviewers (GPs) rated the video-recorded interviews and their ratings were compared with that of psychiatrist (gold standard) to check the inter-rater reliability. Following training of GPs in using GMHAT/PC, their ratings of video recorded interviews was very similar to the ratings of the psychiatrist who recorded the interviews. Due to limited number of video recorded interviews, it was not feasible to carry out statistical analysis. This exercise intended to train the GPs in using GMHAT/PC in a consistent reliable way in the study.

Validity

The study takes account of all diagnosis made by psychiatrists as well as GMHAT/PC. Psychiatrists made a single diagnosis in 183 (61%) cases, multiple (two) diagnosis in 112 (37%) cases and multiple (three) diagnosis in another four cases. GMHAT/PC in almost all cases gave additional multiple diagnoses.

There is an acceptable to good level of agreement between the GP's (GMHAT/PC) diagnoses and the psychiatrists' (clinical) diagnoses of any mental illness, Kappa 0.58; 95% C.I (0.46, 0.72). There is good level of sensitivity (81%) and specificity (92%), with GPs correctly identifying 242 out of the 250 participants diagnosed with mental illness and 27 out of 35 of those without.

The concordance of psychiatrists' ICD-10 based clinical diagnoses and GMHAT/PC diagnoses is given in Table 1.

Concordance was considered as excellent if kappa was greater than 0.75; acceptable to good with values between 0.4 and 0.74, and poor when it was less than 0.4.

Table 1
Level of agreement (Kappa) between psychiatrists' diagnoses and GMHAT/PC diagnoses

Diagnosis	Psychiatrists (n)	GMHAT/PC (n)	Kappa	IC 95%
Any diagnosis	264	250	0.58	(0.46, 0.72)
Psychotic disorder	117	129	0.56	(0.46, 0.66)
Organic disorder	8	8	0.87	(0.69, 1.00)
Alcohol and drug abuse	64	59	0.62	(0.50, 0.74)
Depression	38	68	0.53	(0.41, 0.65)
No mental illness	35	49	0.58	(0.46, 0.72)
Anxiety	10	93	0.14	(0.06, 0.22)
Bipolar disorder (mania)	59	50	0.60	(0.49, 0.73)
Learning disability	50	33	0.40	(0.26, 0.55)
Personality disorder	30	28	0.39	(0.22, 0.56)

Anxiety Disorders

The level of agreement for the diagnosis of anxiety disorders was slight: Kappa 0.14, 95% C.I (0.06, 0.22). Sensitivity was 100% with GPs correctly identifying 10 of the 10 participants diagnosed with anxiety disorders. The specificity was 71% with the GP correctly identifying 206 of the 289 participants not suffering from anxiety disorders.

Depression

The level of agreement for depression was acceptable to good (Kappa 0.53, 95% C.I. 0.41, 0.65). Sensitivity (84%) and specificity (86%) with the GPs correctly identifying 32 of the 38 participants diagnosed by the psychiatrists as suffering from depression and 225 out of 261 of those without.

Psychosis

The level of agreement for the diagnosis of psychosis was acceptable to good: Kappa 0.56, 95% C.I (0.46, 0.66). Sensitivity was 78% with GPs correctly identifying 91 of the 117 participants diagnosed with psychosis. The specificity was 79% with the interns correctly identifying 144 of the 182 participants not suffering from psychosis.

Mania

The level of agreement for bipolar affective disorder (mania) was acceptable to good (Kappa 0.60, 95% C.I. 0.49, 0.73). Sensitivity (63%) and specificity (95%) with the GPs correctly identifying 37 of the 59 participants diagnosed by the psychiatrists as suffering from bipolar affective disorder and 227 out of 240 of those without.

Organic Disorders

The level of agreement for the diagnosis of organic mental disorder was excellent: Kappa 0.87, 95% C.I (0.69, 1.00). Sensitivity was 88% with interns correctly identifying 7 of the 8 participants diagnosed with organic mental disorders. The specificity was 100% with the GPs correctly identifying 290 of the 291 participants not suffering from organic mental disorder.

The sensitivity, specificity, positive predicted value and negative predicted value of each diagnosis is given in Table 2.

Reliability for internal consistency

In order to assess validity, and, in particular, reliability, Cronbach's Alpha was calculated. Reliability was considered as excellent if alpha was greater than 0.9; good with values between 0.7 and 0.9, acceptable with values between 0.6 and 0.7, poor with values between 0.5 and 0.6, and unacceptable when it was less than 0.5.

Table 2
Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of each diagnosis

Diagnosis	Sensitivity	Specificity	PPV	NPV
Psychotic disorder	78%	79%	71%	85%
Organic disorder	88%	100%	88%	100%
Alcohol and drug abuse	67%	93%	73%	91%
Depression	84%	86%	47%	97%
No mental illness	92%	77%	97%	45%
Anxiety	100%	71%	11%	100%
Bipolar disorder (mania)	63%	95%	74%	91%
Learning disability	40%	95%	61%	89%
Personality disorder	43%	94%	46%	94%

Table 3 shows Cronbach's Alpha for every subscale (Symptoms). The internal consistency for depression, mania and disorientation was good with alpha values greater than 0.7. The lower value was for memory with poor internal consistency.

Table 3
Reliability for internal consistency

Symptoms	Cronbach's alpha
Anxiety	0.68
Depression	0.70
Eating disorder	0.68
Mania	0.73
Psychosis	0.67
Disorientation	0.79
Memory	0.54

Feasibility

None of the participants declined participation in the study, and none gave any negative feedback. When asked what they thought of the interview, most expressed satisfaction that the GPs covered all aspects of their mental health using the GMHAT/PC. The GPs who interviewed patients found the GMHAT/PC user friendly and asked whether they could continue using it in their routine practice.

Discussion

The GMHAT/PC shows good agreement with psychiatrist diagnosis for any mental disorder. The tool has better agreements for the diagnosis of psychosis, depression, bipolar (mania) and alcohol and drug abuse. The agreement was excellent for the diagnosis of organic disorders. It's important to clarify that Kappa values are affected by the prevalence of the diagnosis[9]. That could explain the low agreement for anxiety disorders because those are the diagnosis with the lowest number of cases[10].

The results shows that GMHAT/PC have the capacity to correctly identified patients with any mental disorder, specifically psychosis, depression and anxiety. In contrast, the sensibility for the diagnosis of mania, learning disorders, personality problems and alcohol and drug disorders is low. That's not meant necessarily a problem with the GMHAT/PC. In clinical practice is well known that learning disability, personality disorders and substance abuse are difficult diagnosis that they are not usually made in one session. Eventually, the psychiatrists need to make additional assessments and tests to be sure of the diagnosis. For this reason, is not expected that those diagnosis are easily made in a primary care level.

The GMHAT shows a very good capacity to exclude any diagnosis correctly. This applies also with the diagnosis with low sensitivity. High levels of specificity are important because demonstrate that the GMHAT/PC is more a diagnostic instrument than a screening instrument. Mental Health Gap Action Plan, developed by WHO, recommend as key actions the development of simplified diagnostic and treatment tools[10]. In primary care caution should be used when using screening instruments; scales measuring symptomatology tend to have low specificity leading to greater false positives. Therefore, screening instruments should be used to alert GPs that further clinical evaluation is necessary, but not to determine diagnoses. In the other side, if GPs could have diagnostic tools, the evidence suggests that with appropriate training and supervision the primary care professionals can deliver a good deal of care[10].

The proportions of positive diagnosis in the GMHAT/PC that are true positive diagnosis are high for any mental illness, especially psychosis, organic disorders and alcohol and drug abuse.

The negative predicted value was very high for all diagnosis, confirming GMHAT/PC diagnosis properties.

The GMHAT/PC identified fewer patients with alcohol and drug problems than the psychiatrists. All patients were asked about substance use, that means some patients deny its use and the GP couldn't register the information in the tool.

GPs identify more cases of psychosis than the psychiatrists. Some of these patients have behavioral disorders associated to drug abuse. It could be challenging for the GP to differentiate between dysfunctional and impulsive attitudes and psychosis. The same happen with patients with borderline personality, antisocial behavior and impulse control disorders. GPs also diagnose psychosis in patients who really have maniac symptoms instead.

Some patients with psychiatrists' diagnosis of depression were identified by the GMHAT/PC as anxiety. That's not properly a mistake. In primary care the most common co-occurrence is depression and anxiety[11]. The results of this study also demonstrate that depression score showed a significant correlation with anxiety scores. That could imply that most of the patients with depression diagnosis really have a mix anxiety-depression disorder.

GMHAT/PC identified depression in patients with psychiatrist's diagnosis of personality disorder, specifically borderline. It could be estimated that 20% to 50% of inpatients and 50% to 85% of out-patients with a current major depressive disorder have an associated personality disorder[12]. Cluster B personality disorders, in particular borderline (10-30%), seem to be overrepresented[12]. The coexistence of personality disorder and major depression is frequent, and most of the patients of this study could have both.

The GMHAT/PC identifies depression in patients with psychiatrists' diagnosis of alcohol abuse. Depressive symptoms are wide spread in alcohol abusing patients of all ages and are much more common than diagnosable depressive disorder[13]. The prevalence of major depression in alcohol dependence is 17%) and there is no significant correlation between severity of alcohol dependence[13].

Some researchers have indicated that mental disorders exist across all cultures and nations while recognizing that cultural differences exist in symptom presentation and prevalence estimates[14]. Others have suggested the possibility that assessment tools like CIDI and other screening instruments and methods do not capture fully accurate endorsement of the disorders studied because of language or cultural differences in the conceptualization of various symptoms[15]. Differences in meaning of worded prompts or biases towards diagnosis of other psychopathology resulted in a decreased validity and reliability of measures that had been previously validated in English samples[15]. This point out the importance of examining mental health assessment with Spanish validated tools. Is important to remark the fact that Spanish is the lenguage from many different countries and regions and there are also idiosyncratic differences in language between these groups. These types of idiosyncratic differences in language can impact assessment results when the test items include words that vary by country or region[16]. For that reasons, in this study the GMHAT/PC was translated having several Spanish speaking professionals from different countries.

Spanish is one of the most widely spoken languages in the world; it is the official language of 21 countries and the second language in the United States. Therefore, it is relevant to have a valid Spanish version of the most used clinical interviews and assessment tools[16]. It's important to notice that an accurate translation does not guarantee equivalence between the original and the cross-culturally adapted versions, nor does it assure the instrument reliability or validity[16]. That's

why this study is relevant because include the translation of the GMHAT/PC but also the reliability, feasibility and validity of the Spanish version.

The results of this study confirm its value in clinical uses of this tool. As mentioned in the previous sections, the advantage of GMHT/PC over other instruments used in primary care is its ability to provide clinically relevant diagnosis. This allows the physician to take immediate action to solve the patient's problem as far as possible without having to refer the patient to a specialist. In countries like Colombia, the waiting time to see a specialist is between one or three months. Using information technology will let GMHAT/PC based assessments to take place more easily in community settings thus improving patient experience. This could also reduce travel for patients who lives in rural areas and don't have much incomes to cover travel costs.

The GMHAT/PC could demonstrate that frontline workers can be incorporated successfully into an adequate case-detection system that is community and population based and that workers can be integrated meaningfully into the pathway to care of patients living in low resourced settings. An epidemiological study of psychiatric disorders in rural population shows that GMHAT/PC can be used as a standardized diagnosing tool in primary health care centers helping the primary care workers to diagnose psychiatric cases in a short span of time and also in referring them to specialty centers (personal communication).

One relevant use of a computer assisted tool like the GMHAT/PC may be to implement a telepsychiatry model, such as those implemented in countries where limited health care infrastructure exists[17]. Applying this to remote settings with no psychiatrists may contribute to prudent gains in reducing stigma by providing treatment at the community level, particularly in rural areas.

The results of this study will therefore be useful to plan and improve clinical care of people with mental disorders in primary care settings as well as to plan public health interventions.

Strengths of the Study

A good sample size and subjects is the main strength of this study. Previous GMHAT/PC studies used samples of 50 to 215 patients; this study interviewed 299 patients. This study used consultant psychiatrists' diagnoses as a gold standard rather than other measurement or diagnostic tools, trying to keep the GMHAT/PC assessment as close to routine clinical practice as possible. Consultant psychiatrists and professionals doing the assessment in the study were blind to each other's diagnoses. The GP's had no knowledge of the patients before the assessment.

Another strength of this study is a sample with varying degrees of psychopathology in different health care settings. Sample was collected in three hospitals and outpatient facilities.

Clinical diagnoses were made by trained psychiatrists in real settings based on an independent clinical interview using ICD-10 criteria. That implies that the patients included in this study are the same patients who GPs have to evaluate in their daily practice. The inclusion of these patients where many of them had more than one diagnosis made the study more robust. This not only enriched the analysis but also reflected routine clinical practice.

Limitations of the study

The relatively small number of subjects with some disorders (hypochondriasis, eating disorders) in this study could limit the analysis for this group of disorders.

The vast majority of interviews were carried out in mental health units. That implies a greater number of diagnoses of psychosis and bipolar and less cases of anxiety and depression. It's important to use the GMHAT/PC Spanish version in primary care level where the prevalence of cases is different than in a hospital setting.

References

1. Sharma VK, Jagawat S, Midha A, Jain A, Tambi A, Mangwani LK, *et al.* The Global Mental Health Assessment Tool-validation in Hindi: A validity and feasibility study. Indian journal of psychiatry. 2010; 52(4): 316-9.

2. Sharma VK CJ, Krishna M, Lepping P, Bowen M. Use of the Global Mental Health Assessment Tool (GMHAT/PC) in general health care setting. 2013; In press.

3. Bhui K, Mohamud S, Warfa N, Craig TJ, Stansfeld SA. Cultural adaptation of mental health measures: improving the quality of clinical practice and research. The British journal of psychiatry: the journal of mental science. 2003; 183: 184-6.

4. Pull CB, Saunders JB, Mavreas V, Cottler LB, Grant BF, Hasin DS, *et al.* Concordance between ICD-10 alcohol and drug use disorder criteria and diagnoses as measured by the AUDADIS-ADR, CIDI and SCAN: results of a cross-national study. Drug and alcohol dependence. 1997; 47(3): 207-16.

5. Kohn R, Levav I, Caldas de Almeida JM, Vicente B, Andrade L, Caraveo-Anduaga JJ, *et al.* Los trastornos mentales en América Latina y el Caribe: asunto prioritario para la salud pública. Rev Panam Salud Publica. 2005; 18(4/5): 229-40.

6. Dy G, Lecrubier Y. Form and frequency of mental disorders across centres. Mental illness in general health care: An international study. 1995.

7. Sanchez R, Echeverry J. [Validating scales used for measuring factors in medicine]. Rev Salud Publica (Bogota). 2004; 6(3): 302-18.

8. Sharma BB, Singh S, Sharma VK, Choudhary M, Singh V, Lane S, *et al.* Psychiatric morbidity in chronic respiratory disorders in an Indian service using GMHAT/PC. General hospital psychiatry. 2013; 35(1): 39-44.

9. Viera AJ, Garrett JM. Understanding interobserver agreement: the kappa statistic. Fam Med. 2005; 37(5): 360-3.

10. WHO. mhGAP: Mental Health Gap Action Programme: scaling up care for mental, neurological and substance use disorders. Geneva: World Health Organization. 2008.

11. Sartorius N, Ustün TB, Lecrubier Y, Wittchen HU. Depression comorbid with anxiety: results from the WHO study on psychological disorders in primary health care. Br J Psychiatry Suppl. 1996(30): 38-43.

12. Corruble E, Ginestet D, Guelfi JD. Comorbidity of personality disorders and unipolar major depression: a review. J Affect Disord. 1996; 37(2-3): 157-70.

13. Khalid A, Kunwar AR, Rajbhandari KC, Sharma VD, Regmi SK. A study of prevalence and comorbidity of depression in alcohol dependence. Indian J Psychiatry. 2000; 42(4): 434-8.

14. Ballenger JC, Davidson JR, Lecrubier Y, Nutt DJ, Kirmayer LJ, Lépine JP, *et al.* Consensus statement on transcultural issues in depression and anxiety from the International Consensus Group on Depression and Anxiety. J Clin Psychiatry. 2001; 62 Suppl 13: 47-55.

15. Asnaani A, Richey JA, Dimaite R, Hinton DE, Hofmann SG. A cross-ethnic comparison of lifetime prevalence rates of anxiety disorders. J Nerv Ment Dis. 2010; 198(8): 551-5.

16. Benuto LT. Guide to psychological assessment with Hispanics. New York: Springer; 2013. XV, 422 pp.

17. Thara R, Sujit J. Mobile telepsychiatry in India. World Psychiatry. 2013; 12(1): 84.

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Appendix 15 Published paper 3

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Psychiatric morbidity in medically ill patients by means of the Spanish version of the Global Mental Health Assessment Tool - Primary Care (GMHAT/PC)

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ABSTRACT

This study aims at assessing psychiatric morbidity in medically ill patients, as well as examining the employability of the Global Mental Health Assessment Tool - Primary Care (GMHAT-PC) Spanish version in a general health setting. The participants in this study are recruited patients who were hospitalized at the services of Internal Medicine, Surgery and Gynaecology and Obstetrics for a period of one month. The diagnosis of a medical illness was supported by specialists in each service. Also, a trained general practitioner conducted a psychiatric assessment of all the participants making use of GMHAT-PC. It is worth noting that every single interview was carried out at the patient's bedside. With regards to specific numbers, out of 455 medically ill patients, 4.8% had a mental illness identified by dint of the GMHAT-PC interview. Anxiety, depression and mental organic disorders were the most frequently identified mental disorders in internal medicine and surgery. On the other hand, cancer had a significantly higher prevalence of comorbid mental illness. In this study, the proportion of medically ill subjects with mental disorders was markedly lower in contrast with other studies. It was determined that GMHAT-PC is more likely to identify not only clinical cases of mental illness, but also patients who need help. Thus, it can be argued that GMHAT-PC is more of a diagnostic instrument than a screening instrument. It goes without saying that physicians and practitioners can be trained to identify mental illnesses using computer-assisted tools such as GMHAT-PC. A holistic approach of providing care to such patients may improve their overall outcome and quality of life.

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Introduction

The literature shows the relationship between medical illnesses and mental disorders, with an emphasis on anxiety and depression (Schwartzmann, Caporale, Suárez, & Sancristóbal, 2003). Depression is more common in people suffering from physical illnesses rather than in the general population as a whole. Furthermore, it has been pointed out there are strong links between depression and cardiovascular disease, hypertension, respiratory illness, cancer, stroke, diabetes and other metabolic disorders (Yan et al., 2013), whereas anxiety, for example, is more likely to have specific comorbid medical disorders such as angina, mitral valve prolapse, idiopathic cardiomyopathy, labile hypertension, respiratory illnesses, migraine headaches, diabetes mellitus gastrointestinal problems, genitourinary difficulties and thyroid disease (Härter, Conway, & Merikangas,

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2003). Comorbid mental disorders may interfere, aggravate or mimic medical conditions, cause severe impairment of social function, increase disease duration and mortality, decrease subjective quality of life and increase health costs (Härter et al., 2007; Hernández et al., 2001; Yan et al., 2013).

The relationship between medical and mental illnesses could be explained through several reasons (Schwartzmann et al., 2003):

(1) somatic symptoms (pain, disability) could cause emotional, even pathological, reactions,
(2) the hospitalized patient is isolated from his routines and social network,
(3) university hospitals foster additional stress associated with continuous rotations of students and doctors.

The frequency of psychiatrist-determined disorders in hospitalized patients reported in the literature is roughly 40% (Franco, Gómez, Ocampo, Vargas, & Berríos, 2005; Kayhan, Cıcek, Uguz, Karababa, & Kucur, 2013). The disorders most frequently reported in hospitalized patients include delirium, dementia, depression, anxiety and alcohol abuse. Cognitive disorders have been reported with a magnitude oscillating from 6.9 to 30% (Restrepo, Cardeño, Páramo, Ospina, & Calle, 2009; Schwartzmann et al., 2003).

Depression is potentially the most recurrent comorbid disorder presented in medically ill patients, ranging from 7.3 to 38% (Mogollón, Jinete, Moreno, & Álvarez, 2005) (Castro-Camacho et al., 2012). It coexists with chronic diseases, particularly in patients hospitalized in the internal medicine department who are absent of medical insurance, suffer from severe psychical illnesses and have a repeated history of hospitalization (Mogollón et al., 2005; Yan et al., 2013; Zhong et al., 2010). Contrastingly, anxiety is described in between 7.7 and 24.3% of patients, and substance abuse is found in approximately 14.4% of patients (Castro-Camacho et al., 2012; Härter et al., 2007).

Inevitably, there are some differences in the nature of mental problems encountered in men and women. One study found a 60% prevalence of mental disorders in men (alcohol dependency in 26%, delirium or dementia in 10.8%, anxiety disorders in 10.4%, major depression in 7.8% and adaptation disorders in 3%). As for the opposite sex, 65% was found in females (major depression in 23.2%, anxiety disorders in 14.3%, adaptation disorders in 8.4%, dementia in 5.6%, delirium in 3% and alcohol dependency in 2.5%) (Hernández et al., 2001). In a different study, a prevalence of mental illness in 22% of men was detected, whereas in women it went up to 55%. Indeed, women experienced depressive-, anxiety- and somatization-related disorders much more frequently (Alkhadhari et al., 2016).

Despite the frequency of psychiatrist-determined disorders within hospitalized patients, it is estimated that nearly half of the cases with these patients, or even more, go unnoticed and do not receive adequate treatment, indicating a serious neglect of those diagnoses in general hospitals (Franco et al., 2005; Hernández et al., 2001; Zhong et al., 2010). The lack of recognition of mental health problems has a negative influence on morbidity, mortality, quality of life and unnecessary pharmacological and diagnostic procedures (Yan et al., 2013).

Former studies involving mental illnesses and hospitalized patients have some limitations, nonetheless. Seemingly, they present disparate methodologies (i.e., assessment methods, time window, sampling procedures) employed among the studies (Härter et al., 2003). For instance, a study conducted in Argentina attempted to identify the presence of major depression in medically-ill patients by using different screening instruments and contrasting them with a clinical evaluation (Yanzón de la Torre et al., 2016). In that study, the prevalence of major depression was 27% when a psychiatric evaluation was conducted. The only instrument that had similar results was the Hospital Anxiety and Depression Scale (25%), whereas 44 and 56% were reported by the Beck Depression Inventory and the Patient Health Questionnaire, respectively (Yanzón de la Torre et al., 2016). These results demonstrate that by making clinic-related decisions based on screening instruments, there is always the latent risk of over-diagnosing patients, and even recurring to pharmacological treatment in cases where they are not necessary at all. Most of these studies focused on specific somatic diseases, for instance asthma, cancer, chronic spinal pain and atherosclerosis, whilst others focused on certain

mental disorders such as affective disorders (Campo, 2005). The vast majority of studies that have determined the prevalence of mental disorders among in-patients have used only self-reported instruments or scales (Yan et al., 2013). Furthermore, in clinical practice and research in this population it is recommended to use standardized-structured clinical interview and international diagnostic criteria in order to obtain more accurate diagnoses and explore a wide range of psychiatrist-based disorders (Campo, 2005).

The aim of this study is to establish the feasibility of using GMHAT/PC in general hospital settings to detect metal illnesses present in medically-ill patients.

Methods

Sample

Neiva's University Hospital, Hernando Moncaleano Perdomo, is a high-complexity center that receives referrals from southern Colombia. It has out-patient and in-patient services and has every medical specialty. Following the purpose of this study, a recruitment of patients was performed. They were hospitalized at the services of Internal Medicine, Surgery and Gynaecology and Obstetrics (GO) during a period of one month for each service. The diagnosis of a medical illness was supported by specialists in each service. The study was approved by the Hospital's Ethics Committee, and informed consent was taken from all the participants.

Instrument

A trained GP conducted a psychiatric assessment of all the participants being exposed to GMHAT/PC. The interview was carried out at the patients' bedside. Generally speaking, GMHAT/PC is a computerized clinical assessment tool developed to assess and identify mental health problems in primary care. In this assessment, the first screen is for patient information and administration of the program. The assessment program starts with basic instructions giving details on how to use the tool and rate the symptoms. The introductory screens facilitate in-putting of descriptive information in the following fields: presenting symptoms, and relevant past, family and personal problems.

The following screens consist of a series of questions leading to a comprehensive yet quick mental state assessment focusing sequentially on the following symptoms or problems: worries, anxiety and panic attacks; concentration; depressed mood (including suicidal risk); sleep; appetite; eating disorders; hypochondriasis; obsessions and compulsions; phobia; mania/hypomania; thought disorder; psychotic symptoms (delusions and hallucinations); disorientation; memory impairment; alcohol misuse; drug misuse; personality problems; and stressors. One question at a time comes up from these respective subsections. The questions then proceed in clinical order along a tree-branch structure. For each of the major clinical disorders there are one or two screening questions. The interview moves on to the next subsection only when the patient does not have symptoms based on the screening items of the current subsection.

At the end of the interview the screen asks for the interviewer's details and the clinical diagnosis. Later on, the screening continues to a menu where the following items are shown:

(1) rating scores and computer diagnosis,
(2) assessment,
(3) referral letter.

The main symptom groups on which the rating scores are based are: anxiety, depression, concentration, eating disorder, hypochondriasis, phobias, obsessions, mania, psychosis, memory impairment and disorientation. In addition to this, there are sections for alcohol and other drug misuse, stressful events and personality difficulties. The main computer diagnosis is derived from

Table 1. Mental health disorders in medical settings using the Global Mental Health Assessment Tool - Primary Care (GMHAT-PC).

GMHAT diagnosis	Respiratory diseases[a] (%)	Cardiac diseases[b] (%)	Epilepsy (%)
Anxiety	20.2	4.4	1.7
Depression	13.3	14.4	0.6
Psychosis	2	0.8	4.5
Obsessive compulsive disorder	4.6	ND	1.7
Phobia	1.8	0.8	1.1
Personality disorder	1.5	ND	7.3
Hypochondriasis	0.8	ND	ND
Stress	0.3	0.8	ND
Organic	0.3	0.8	1.8
Alcohol abuse	ND	ND	2.3

Note: ND, no data.
[a]Sharma et al. (2013).
[b]Krishna et al. (2009).

hierarchical model and designed around ICD-10. The diagnostic program takes account of severity of symptoms, from moderate to severe levels. It also generates an alternative diagnosis based on the presence of symptoms in relation to other disorders.

The GMHAT/PC has been proven useful not only in various medical settings concerning the assessment of mental disorders, but also in calculating the prevalence of mental illnesses in somatic patients. As a case in point of its coverage, a study carried out in India used it to diagnose psychiatric morbidity in chronic respiratory disorders (Sharma et al., 2013). There have also been studies in other medical settings, including cardiac and epileptic patients (Krishna et al., 2009).

The diagnosis of comorbidity made by the GMHAT in different settings is shown in Table 1.

Results

From the start it was decided to interview at least 400 patients in order to acquire a significant number of participants in different subgroups of each medical illness to reveal a meaningful psychiatric morbidity in this population. We used a convenience sample reflecting patients with medical, surgical or GO disorders who sought for help from a specialist in a hospital as an in-patient.

A total of 455 participants were interviewed using GMHAT/PC. Among those patients 282 (61.98%) were female and 173 (38.02%) were male. The overall mean time taken to administer GMHAT was 12.5 minutes, (standard deviation = 9.98 minutes, range = 3–36 minutes).

The demographic data of the patients is given in Table 2.

Of 150 patients interviewed in the internal-medicine ward, 12 (8%) had a mental illness based on the GMHAT/PC interview. Of the three patients with a mental organic diagnosis, two were women and one a man, all of them were over the age of 70. The patients with anxiety were all women, and of those patients with depression, two were women and one a man. The two patients with drug misuse were men, and one patient with hypochondriasis was a 20-year-old woman.

A total of 150 patients from surgical wards were interviewed using GMHAT/PC. Of these, 10 (7%) presented a mental illness. Both cases of mental organic diagnosis were women over the age of 82, and three of the four patients with depression were women. In addition, both patients with

Table 2. Demographic data of the patients.

	Internal medicine		Surgery		Gynaecology and obstetrics
Gender	Male	Female	Male	Female	Female
N (%)	82 (54.67)	68 (45.33)	91 (60.67)	59 (39.33)	155
Age (mean)	63.06	63.80	40.98	51.64	26
Range (years)	18–88	19–94	18–84	19–89	14–74
Diagnosis of mental illness *n* (%)	4 (4.87)	8 (11.76)	4 (4.39)	6 (10.16)	0

Table 3. Mental health diagnosis distribution of the patients with mental illness.

Psychiatric diagnosis	Internal medicine (*n*)	Surgery (*n*)	Associated diagnosis
Depression	3	4	Total gastrectomy, melanoma, leg ulcer, peritoneal carcinomatosis, myocardial infarction, rheumatoid arthritis, cervical cancer
Mental organic disorder	3	2	Bowel obstruction, diverticulitis, stroke, prostate adenocarcinoma, urinary tract infection
Anxiety	3	1	Rectal tumor, ovarian cancer, cervix cancer, epigastric pain
Substance abuse	2	2	Foreign body, thoracostomy, 26% burns, cocaine pneumopathy
Obsessive compulsive disorder	–	1	Esophageal adenocarcinoma
Hypochondriasis	1	–	Thoracic pain

drug abuse were men. One woman presented a case of anxiety disorder and one man was undergoing an obsessive compulsive disorder.

In all, 155 patients from GO were interviewed using GMHAT/PC. Their age ranged from 14 to 74, with a mean age of 26. None of these women had any mental illness, nevertheless.

Mental illness and medical diagnosis

Table 3 gives the psychiatric diagnosis in patients together with the medical or surgical conditions for which they needed in-patient care. However, none of the cases detected by GMHAT/PC was previously identified by their respective services as suffering from a mental illness.

Discussion

It was reassuring to find that GPs were easily trained for mental health interviewing employing GMHAT/PC. The GPs reported that they were motivated to use computers and the GMHAT in their future clinical assessments. The feedback of from the GPs was positive after the study, and it became a part of their routine practice to ask questions about mental health. This is also an opportunity of training staff in mental health through clinical tools supported and applied by specialists.

Patients' experiences showed some quite positive results as well. They were reluctant in the beginning, but their viewpoints smoothly shifted to a more cooperative and engaged attitude after the interviews. They liked of the types of questions, and how they covered all aspects of their mental health without making them feel uncomfortable or being judgmental about their private life.

This study demonstrates that it is possible to carry out interviews in a medical setting. Usually the lack of time is a reason to not do assessments with medically ill patients. At times, doctors are also unsure about the right questions to use when evaluating the mental state of a patient and/or have no knowledge about the diagnostic criteria. The use of semi-structured interviews such as GMHAT could drastically help in tackling this issue. It is of utmost importance that doctors can count on short and reliable tools like GMHAT that enable them to identify and manage patients with mental illnesses, and that they should be used consistently in medical settings.

The GMHAT/PC is more close to identifying clinical cases of mental illnesses , and also patients who need help. As described above, GMHAT is more of a diagnostic than a screening instrument. This means that the probability of false positives is very low and doctors who use GMHAT can be certain that those patients diagnosed need immediate attention. It is also important to note that none of the patients diagnosed by GMHAT had been identified by the medical team, though they were given appropriate help, advice and treatment.

In this study the proportion of medically ill subjects with mental disorders was fewer in comparison to other studies. Authors have reported a range between 7 and 60% of psychiatrist-determined disorders in hospitalized patients (Franco et al., 2005; Kayhan et al., 2013). The examined patients in this study who presented a mental illness did not exceed 8%. This could be for several reasons.

The assessment methods used in previous studies include the Minimental State Examination, the Hospital Anxiety and Depression Scale and CAGE questionnaire (Costas, Prado, & Crespo, 2013; Schwartzmann et al., 2003). These are screening tools that could identify patients with symptoms but not necessarily with disorders. This feature is important because the presence of positive signs in relation to a certain symptoms does not necessarily indicate the presence of a diagnosis. For instance, obtaining high scores on the Beck Depression Inventory for Primary Care or in the Patient Health Questionnaire-9 may be indicative of a major depressive disorder, but could also indicate the presence of an inner struggle or a secondary depressive disorder concerning a medical condition. These three types of diagnoses require different treatment approaches and solely from the clinic, they could be distinguished one another. Furthermore, one of the problems that can occur with screening instruments is that, owing to their high sensitivity, they can be unreliable and misleading. Unquestionably, this would result in a significant number of false positives.

Most of the previous studies focused on specific somatic diseases are highly associated with mental disorders. For example, almost half of the patients with asthma and chronic respiratory illnesses meet diagnostic criteria for a mental disorder (Goodwin et al., 2014; Sharma et al., 2013). The prevalence of mental health conditions in cancer patients in acute care is 32% (Singer, Das-Munshi, & Brahler, 2010). The prevalence of mental problems in arthritis is 29% for anxiety and 26% for depression (Wang, Liu, & Wang, 2014). With regards to the current study, patients present a great variety of diagnoses. Some of them had serious diseases, but most of them had physical problems not usually related with mental problems. In the group of surgery patients, 25% of patients had a diagnosis of acute appendicitis and hernias and none of them had a diagnosis of mental illness. In the GO group, 73% of patients were hospitalized for vaginal and caesarean delivery and none of them had mental problems. In contrast, 20 of the 455 patients had a cancer diagnosis and, of them, almost half had had a psychiatric diagnosis.

The psychiatric comorbidity is often one of the most important indices of disability associated with a medical illness. Furthermore, the role of psychosocial and psychiatric interventions in the secondary and tertiary prevention (i.e., the prevention of the progression or recurrence of disease and prevention of complications, respectively) is also of high importance (Gupta & Gupta, 2003). The medical conditions tend to present two features: (1) they are often exacerbated by psychosocial stress and (2) they may be comorbid with major psychiatric syndromes such as those of depressive illnesses. Recognition of patients who may be at a high risk of developing psychosocial and psychiatric comorbidity is therefore an important component of the overall management of these patients (Gupta & Gupta, 2003). By making mental health treatment an integral part of general medical care, a higher percentage of those now untreated for their psychiatric disorders can have their mental health needs addressed in coordination with their physical disorders (Kathol & Clarke, 2005).

Limitations of the study

This study did not take into account patients in other specific situations that have been described as related to psychiatric morbidity based on the number of hospitalizations and previous psychiatric history.

Most of the psychiatric diagnoses could be reactive to the stressful situation of hospitalization, thus a remission of the symptoms could be very likely after discharge. Indeed, it would have been interesting to have kept a record of those diagnosed cases.

Finally, the relatively small number of subjects with psychiatric disorders in this study could limit the analysis for this group of disorders.

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References

Alkhadhari, S., Alsabbri, A. O., Mohammad, I. H., Atwan, A. A., Alqudaihi, F., & Zahid, M. A. (2016). Prevalence of psychiatric morbidity in the primary health clinic attendees in Kuwait. *Journal of Affective Disorders, 195*, 15–20. doi:10.1016/j.jad.2016.01.037

Campo, A. (2005). Prevalencia de trastornos mentales en pacientes medicoquirúrgicos: ¿Son válidos los resultados? *Revista Colombia Médica, 36*(4), 292–294.

Castro-Camacho, L., Escobar, J., Sáenz-Moncaleano, C., Delgado-Barrera, L., Aparicio-Turbay, S., Molano, J., & Noguera, E. (2012). Salud mental en el hospital general: resultados del Cuestionario de Salud del Paciente (PHQ) en cuatro servicios de atención*. *Revista Colombiana de Psiquiatría, 41*(1), 61–85.

Costas, M., Prado, V., & Crespo, J. (2013). Ansiedad y depresión entre los pacientes hospitalizados en el complejo hospitalario de Ferrol. C. *Med. Psicosom, 107*(7), 16–22.

Franco, J., Gómez, P., Ocampo, M., Vargas, A., & Berrios, D. (2005). Prevalencia de trastornos psiquiátricos en pacientes medicoquirúrgicos hospitalizados en la Clínica Universitaria Bolivariana de Medellín, Colombia. *Revista Colombia Médica, 36*(3), 186–193.

Goodwin, R., Hottinger, K., Pena, L., Chacko, A., Feldman, J., Wamboldt, M., & Hoven, C. (2014). Asthma and mental health among youth in high-risk service settings. *Journal of Asthma, 51*(6), 639–644.

Gupta, M., & Gupta, A. (2003). Psychiatric and Psychological Co-Morbidity in Patients with Dermatologic Disorders. *American Journal of Clinical Dermatology, 4*(12), 833–842.

Härter, M., Baumeister, H., Reuter, K., Jacobi, F., Höfler, M., Bengel, J., & Wittchen, H. (2007). Increased 12-Month Prevalence Rates of Mental Disorders in Patients with Chronic Somatic Diseases. *Psychotherapy and Psychosomatics, 76*(6), 354–360.

Härter, M., Conway, K., & Merikangas, K. (2003). Associations between anxiety disorders and physical illness. *European Archives of Psychiatry and Clinical Neuroscience, 253*(6), 313–320.

Hernández, G. G., Ibáñez, H. C., Kimelman, J. M., Orellana, V. G., Montino, R. O., & Núñez, M. C. (2001). Prevalencia de trastornos siquiátricos en hombres y mujeres hospitalizados en un Servicio de Medicina Interna de un hospital de Santiago de Chile. *Revista médica de Chile, 129*(11), 1279–1288.

Kathol, R., & Clarke, D. (2005). Rethinking the place of the psyche in health: Toward the integration of health care systems. *Australian and New Zealand Journal of Psychiatry, 39*(9), 816–825.

Kayhan, F., Cicek, E., Uguz, F., Karababa, I., & Kucur, R. (2013). Mood and anxiety disorders among inpatients of a university hospital in Turkey. *General Hospital Psychiatry, 35*(4), 417–422.

Krishna, M., Lepping, P., Sharma, V., Copeland, J., Lockwood, L., & Williams, M. (2009). Epidemilogical and clincial use of GMHAT-PC (Global Mental Health assessment tool - primary care) in cardiac patients. *Clinical Practice and Epidemiology in Mental Health, 5*(1), 1–7.

Mogollón, J., Jinete, S., Moreno, I., & Álvarez, M. (2005). Prevalencia de trastorno depresivo mayor en pacientes mayores de 50 años hospitalizados en un servicio de medicina interna. *MedUNAB, 8*(1), 11–14.

Restrepo, D., Cardeño, C., Páramo, I., Ospina, S., & Calle, J. (2009). Delirium: incidencia y características clínicas y epidemiológicas en un hospital universitario. *Revista Colombiana de Psiquiatría, 38*(3), 471–487.

Schwartzmann, L., Caporale, B., Suárez, A., & Sancristóbal, S. (2003). Incidencia de trastornos psíquicos en pacientes con enfermedades médicas: ¿qué hacer? *Revista de Psiquiatría del Uruguay, 67*(1), 21–38.

Sharma, B., Singh, S., Sharma, V., Choudhary, M., Singh, V., Lane, S., … Copeland, J. (2013). Psychiatric morbidity in chronic respiratory disorders in an Indian service using GMHAT/PC. *General Hospital Psychiatry, 35*(1), 39–44.

Singer, S., Das-Munshi, J., & Brahler, E. (2010). Prevalence of mental health conditions in cancer patients in acute care--a meta-analysis. *Annals of Oncology, 21*(5), 925–930.

Wang, K., Liu, X., & Wang, L. (2014). Associations of alcohol consumption and mental health with the prevalence of arthritis among US adults: Data from the 2012 National Health Interview Survey. *Rheumatology International, 34*(9), 1241–1249.

Yan, Z., Gu, M., Zhong, B., Wang, C., Tang, H., Ling, Y., … Li, M. (2013). Prevalence, risk factors and recognition rates of depressive disorders among inpatients of tertiary general hospitals in Shanghai, China. *Journal of Psychosomatic Research, 75*(1), 65–71.

Yanzón de la Torre, A., Oliva, N., Echevarrieta, P. L., Pérez, B. G., Caporusso, G. B., Titaro, A. J., … Daray, F. M. (2016). Major depression in hospitalized Argentine general medical patients: Prevalence and risk factors. *Journal of Affective Disorders, 197*, 36–42.

Zhong, B., Chen, H., Zhang, J., Xu, H., Zhou, C., Yang, F., … Zhou, L. (2010). Prevalence, correlates and recognition of depression among inpatients of general hospitals in Wuhan, China. *General Hospital Psychiatry, 32*(3), 268–275.